MID-PACIFIC OCEANOGRAPHY
JANUARY – MARCH 1950

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SPECIAL SCIENTIFIC REPORT: FISHERIES No. 54

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Explanatory Note

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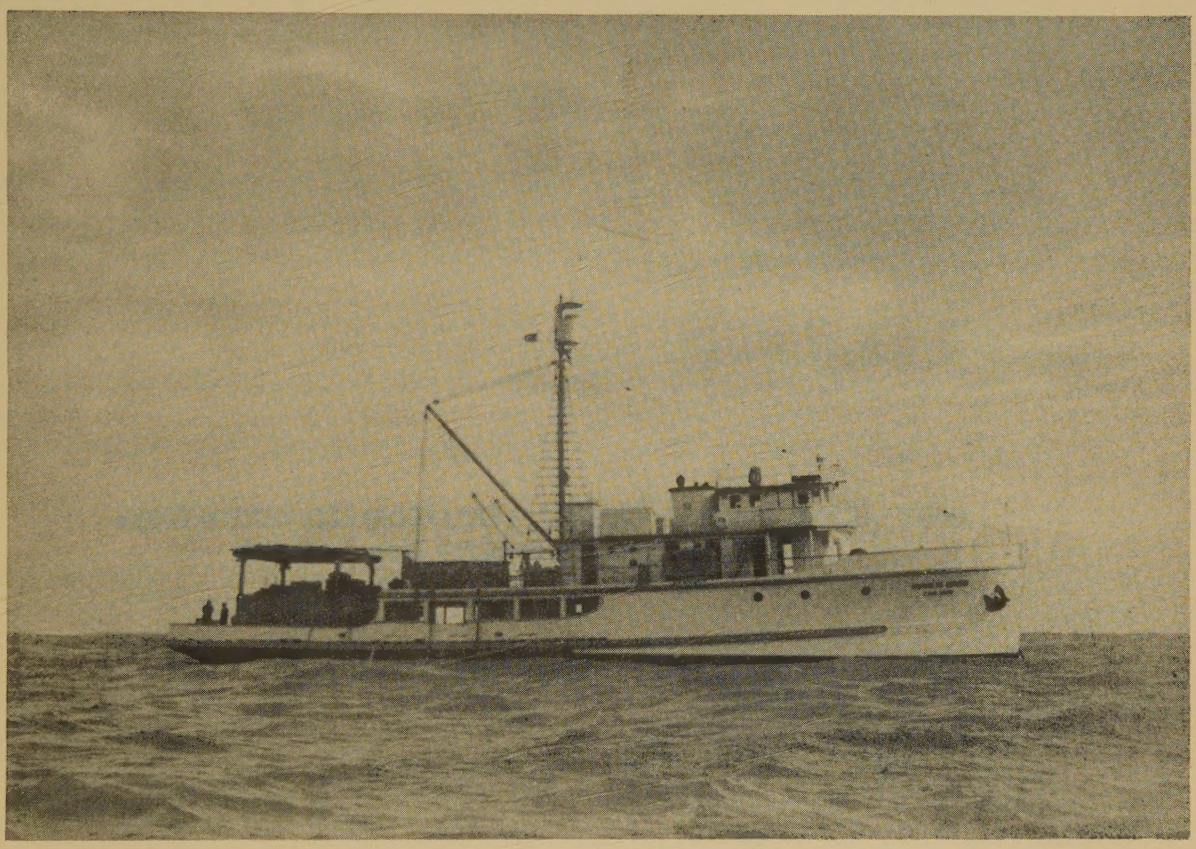
Washington, D. C.
July, 1951



U. S. Fish and Wildlife motor vessel HUGH M. SMITH currently engaged in hydrographic and fishing research in the central Pacific.

United States Department of the Interior - - - Oscar L. Chapman, Secretary
Fish and Wildlife Service - - - Albert M. Day, Director

MID-PACIFIC OCEANOGRAPHY, JANUARY THROUGH MARCH, 1950

by Townsend Cromwell, Oceanographer

Special Scientific Report - - - Fisheries No. 54

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PART I: THE OCEANOGRAPHIC PROJECT

INTRODUCTION

Since the physical and chemical environment is of basic importance to organic production in the ocean, an Oceanographic Project was initiated within the Pacific Oceanic Fishery Investigations (P.O.F.I.) to describe this environment. This report is the first of several planned to present the hydrographic data in tabular and graphic form with discussions of some of the results. It is hoped that through these reports the data will become available to workers interested in the oceanography of the central Pacific.

OBJECTIVES OF OCEANOGRAPHIC PROJECT

The first objective of the Oceanographic Project is to describe the major currents and the distribution of physical and chemical properties of the central equatorial Pacific in somewhat greater detail than has yet been done. The second objective is to describe and explain as many of the variations of these features as possible. The variations are probably very complex, being of various magnitudes and occurring over different intervals in time and space. Finally, the physical and chemical oceanography is being related to data collected on the organic production of the region by other P.O.F.I. projects.

DESCRIPTION OF VESSEL, EQUIPMENT AND PROCEDURES

Since this is the first report of oceanographic work accomplished by P.O.F.I., a brief description of the vessel, equipment and procedures is presented.

The HUGH M. SMITH is one of three motor vessels operated by P.O.F.I. She is a U.S. Navy YP of 700 dead weight tons converted to carry out oceanographic and fishing research and is pictured in the frontispiece of this report. Her overall length is 128 feet and her beam 29 feet. Her design is identical to the West Coast bait boat tuna clipper.

She has two adjacent laboratories on the main deck, one in which biological work is carried out and a second in which chemical analyses are performed. A third cabin at the disposal of the scientific personnel is located on the boat deck. This space houses most of the meteorological recording instruments and the recording sea surface thermograph.

Loran equipment is aboard which allows very accurate fixes when within about 1400 miles of the Hawaiian Islands. Beyond this range, it is usually necessary to rely on astronomical fixes and dead reckoning for position.

The hydrographic gear includes two winches on the main deck. The first of these is a Markey Type DES 3 15 hp. electric deck winch spooling 5/32" stainless steel wire rope, and used for hydrographic casts, and the second a Kolstrand hydraulic winch which spools 3/32" wire rope and develops 5 hp. for lowering the bathythermograph. A Markey Type DES 4 electric winch of the same general specifications as the hydrographic winch but spooling 1/4" stainless steel wire rope is located on the boat deck and is used for plankton tows.

The instruments and procedures employed at sea are those more or less standard in oceanography and will be described simultaneously with a description of a hydrographic station. Such stations take 1½ to 4 hours, averaging about 2 hours. Upon arrival on station, the vessel is hove to and the 900 ft. bathythermograph lowered and retrieved. Nansen type water sampling bottles carrying protected and unprotected reversing thermometers are then lowered on the "hydrographic cast". After ten minutes of "soaking" the thermometers are considered to be at equilibrium, the water bottles are reversed by messengers along the wire, and then retrieved. A surface water sample is collected in an open bucket. A second "on station" bathythermograph observation is accomplished immediately after the "cast" is retrieved and this is followed by the plankton tow. Water samples for the determination of oxygen, inorganic phosphate and salinity are drawn in the order mentioned and all thermometers read and then check read by a second observer.

Oxygen content is determined by the Winkler titration method. Inexperienced personnel run duplicate titrations but it has been found that a single titration by experienced observers is sufficient.

Inorganic phosphate is determined through use of the Automatic Servo-Operated Photometer, an instrument developed by the Scripps Institution of Oceanography. A pair of determinations are made for each water sample.

Salinity samples, stored in citrate bottles, are returned to the P.O.F.I. laboratory in Honolulu. Two or more chlorinity determinations of each sample are made by the Knudsen method and converted to salinity.

Most of the methods employed in processing the data are those used on the Marine Life Research Program of the Scripps Institution of Oceanography.

The readings of protected and unprotected thermometers are "corrected" to readings "in situ" through the use of graphs.

Thermometric depths are computed and plotted on a graph of wire length minus thermometric depth versus wire length as developed by Robert O. Reid and described by La Fond (1950). The actual depths of the water sampling bottles are determined on the basis of this curve and therefore the actual depths of all measurements of the physical and chemical properties are known. These measurements of temperature, salinity, oxygen and inorganic phosphate are plotted against depth for each hydrographic station. The points are then joined by smooth curves. The curve drawing involves, of course, an interpolation between points but a sufficient number of sampling bottles are included in each hydrographic cast that the interpolation error is quite small. In the case of temperature, the interpolation in the upper 275 meters is aided by the continuous bathythermograph trace. From the vertical distribution curves the interpolated values are read at standard depths and tabulated. σ_t, a quantity approximately equivalent to the density, is determined through the use of the tables of La Fond (1940). From the values of temperature and salinity at standard depths dynamic computations are performed, using graphs printed by the U.S. Navy Hydrographic Office, except that the second order terms of the specific volume anomaly involving pressure are computed using a slide rule. The results of these computations lead to the determination of the ocean currents which are associated with the distribution of mass.

The procedure described to this point is a more or less standard treatment of physical and chemical oceanographic data. Further analysis or presentation varies and is determined by the nature of the observations and the objectives of the presentation.

PART II: SOME RESULTS OF THE 1950 WINTER CRUISE OF THE SMITH

INTRODUCTION

Oceanographic data from the central equatorial Pacific is sparse. Information has been collected by various expeditions, the most notable being the seventh cruise of the CARNEGIE during 1928-29 but the scope and objectives of this cruise did not allow a closer spacing of hydrographic stations than one about every 200 miles in the equatorial Pacific region. With a spacing of 60 miles between stations, the data presented in this report are the most detailed yet to be published of the region.

PRESENTATION OF DATA

The station pattern for Cruise II of the SMITH was planned to cut perpendicularly across the major currents of the equatorial Pacific along two rather widely spaced lines (see Fig. 1). Two north-south lines at 172°W and 158°W were followed (with the exception of stations 1 to 8). Stations 27-29 were not hydrographic stations. The data for each hydrographic station appears in tabular form at the end of this report. These data have been further represented by cross sections (Figs. 2-15).

METHOD OF DRAWING CROSS SECTIONS

In drawing the cross sections of temperature, inorganic phosphate, salinity, and oxygen (Figs. 8-15) an identical method has been employed. The depths of occurrence of the particular values for which isopleths are drawn were read from the vertical distribution curves for each station, the points plotted and the cross sections drawn. To give an objective presentation, the isopleths were drawn through all points except those which were unquestionably in error.

BRIEF DESCRIPTION OF CROSS SECTIONS

Dynamic Height Cross Sections (Figs. 2 and 3):

These sections show the smoothed profiles of isobaric surfaces with respect to the 1000 decibar surface. The dots represent the actual results of dynamic computations and are plotted to show what liberties with the data have been taken in the smoothing process. Significant features of these sections will be described under Current Sections below.

Bathythermograph Sections (Figs. 4 and 5):

900 ft. bathythermograph observations were made approximately every 10 miles along both lines of stations. The unsmoothed results are presented in Figs. 4 and 5.

A horizontal eddy appears on the eastern section as a deep penetration of warm water at about $12\frac{1}{2}^{\circ}$N. The existence of this eddy is substantiated by further evidence which is discussed in ensuing sections of this report.

At the top of the diagrams, the surface temperature is plotted according to the inset temperature scale. To draw this curve, surface temperature observations were plotted and a smooth curve drawn with the aid of records of the recording thermograph which was in continuous operation during the cruise. These curves indicate warm surface water at the southern end of the station lines and relatively cold surface water at the equator. From the equatorial region northward the sea surface becomes gradually warmer to about 7°N but sudden increases occur near 2°N along the western section and near $4\frac{1}{2}^{\circ}$N along the eastern. These rapid changes in the sea surface temperature over very short distances have the appearance, almost, of discontinuities on the thermograph trace. It is interesting to note that on the western section this pronounced "discontinuity" occurs immediately over a deepening of the homogenous surface layer. No reasonable smoothing of the thermocline depth or the 65°, 70° and 75° isotherms would eliminate this relationship. The temperature "discontinuity" must be the result of a convergence in the surface current. Sinking of surface water would result, and this view is consistent with the deepening of the thermocline. On the eastern section this relationship is somewhat less clearly defined. There are apparently two or three "deepenings" of the thermocline associated with a relatively broad region of rapid surface temperature change which includes a small "discontinuity". This situation is believed to result from a less pronounced convergence with a broader region of sinking than at the western convergence.

From 7°N the surface temperature decreases northward. A third sudden change in the surface temperature was noted on the thermograph trace at about $14\frac{1}{2}^{\circ}$N along the eastern line of stations and is possibly associated with the horizontal eddy circulation. The three sea surface temperature "discontinuities" described above are the only ones which appeared along the station lines.

Current Sections (Figs. 6 and 7):

The relative currents shown in Figs. 6 and 7 were computed from the smoothed profiles of Figs. 2 and 3 by means of the geostrophic formula:

$$v = \frac{10^3 (\Delta D_A - \Delta D_B)}{L \, 2\omega \, \sin\varphi}$$

where $\Delta D_A - \Delta D_B$--difference in dynamic height anomalies at two hydrographic stations, A and B.

L = distance between stations A and B.

ω = angular velocity of the earth's rotation (0.729×10^{-4} radians per sec.)

and φ = mean latitude between stations A and B.

If cgs units are used, v is given in cm.per.sec. Because of the uncertainty

of relative current computations near the equator, the results between 3°N and 3°S have not been included in the figures.

The major currents are immediately recognizable on either the relative current sections or the dynamic height profiles. The western sections (Figs. 2 and 6) show a moderately strong North Equatorial Current flowing toward the West between latitudes 15°N and 10½°N. Between 10½°N and 5½°N the strong Equatorial Countercurrent flows towards the East. South of the countercurrent to about 2½°S is the South Equatorial Current.

North of the North Equatorial Current is a broad region of nearly slack water. A slight easterly flow between 16°N and 19°N and down to about 50 m. is indicated. This may be a true feature, but the magnitude of the current is about as small as errors inherent in the method of relative current determinations. A similar easterly flow of considerable magnitude is apparent between approximately 2½°S and 4½°S. However, it should be pointed out that observations of internal waves during this cruise revealed oscillations in the thermocline of a magnitude large enough to cause the fictitious appearance of such a current if the hydrographic stations chanced to have been spaced with respect to the phase of the oscillation in a manner conducive to producing this feature.

On both the eastern (Figs. 3 and 7) and western sections, the countercurrent is strong only in the layer above 200 m., no speeds greater than 7 cm./sec. appearing below this depth. At slower speeds the northern half of the countercurrent reaches to at least the 700 db. surface though it is very slow throughout the greater depths. The South Equatorial Current appears to extend northward beneath the southern portion of the countercurrent.

The swiftest part of the countercurrent appears at about 50 m. below the surface and near its southern boundary. Rather unexpectedly a large anticyclonic shear is indicated.

It was mentioned in the discussion of the bathythermograph sections that along the eastern station line the boundary between the North Equatorial Current and the countercurrent is complicated by the existence of a large horizontal eddy. The dynamic profile and current sections show this eddy centered slightly north of 11°N. The flow in the eddy is, of course, not geostrophic. Due to the effects of curvature and frictional forces, the current speeds indicated in the eddy may be appreciably in error.

Temperature Sections (Figs. 8 and 9):

These cross sections are based on temperatures from reversing thermometers. The isotherms above 300 m. show, of course, the same general features as the bathythermograph sections.

The cold surface water at the equator is strikingly in evidence.

Inorganic Phosphate Sections (Figs. 10 and 11):

Both sections show the same general features. The surface layer is generally low in phosphate and there is an increase in concentration with

depth. The cold, rich phosphate waters below the thermocline approach nearest to the surface at about 9°N or 10°N at the boundary between the North Equatorial and Equatorial Countercurrent.

Probably of greater importance to phytoplankton production is the distribution of inorganic phosphate in the "mixed layer" above the thermocline. The greatest enrichment of the surface layer is in the immediate vicinity of the equator. From this region northward the concentration decreases to a value of about .4 μg at./l. and remains nearly constant thereafter. There is no evidence that any enrichment of the surface layer is occurring at the boundary between the North Equatorial and the countercurrent.

The eddy appears again on the eastern section. A rising of the .4 μg at./l. isopleth toward the surface at 15°N and a local maximum of something greater than .6 μg at./l. at a depth of about 50 m. are shown, but a word of caution should be injected. This particular feature (the .4 μg at./l. isopleth) is drawn entirely on the basis of a pair of inorganic phosphate determinations from a single water sample. The two values obtained were 0.49 and 0.72 μg at./l., the difference between these values being much greater than the spread between average pairs of determinations. The mean value of .67 μg at./l. is not reliable but has been included in accordance with the policy of ignoring only those values which are known definitely to be in error.

This point is discussed at such length because of the possibility that horizontal eddies at current boundaries may result in vertical movements to produce an enrichment of waters near the surface. The dubious phosphate determination is not considered to be evidence in support of or against this view.

Salinity and Oxygen Sections (Figs. 12-15):

The isohalines in the eddy are more complicated than those at a comparable latitude in the western cross section.

Levels of minimal oxygen concentration are represented on Figs. 14 and 15 by dashed lines. All levels above and below which the oxygen concentration increases are drawn if the minimum layer so defined appears on two or more consecutive stations. Double and triple minima were encountered at some stations.

INFORMATION FROM WIRE ANGLES

Wire angles are given with the tabular summary of data for each hydrographic station. It was necessary to occupy a number of stations near the equator while under power "upstream" to keep the wire angle down. The angle would have been at least 60° in these cases had the vessel not been underway.

Wire angles in the countercurrent are generally small compared to those in the swift parts of the North and South Equatorial Currents. That this should be true is quite reasonable when the forces tending to

move the vessel with respect to the nearly motionless waters at the bottom of the cast are considered. The winds throughout the cruise were generally from the East tending to drive the vessel toward the West. Within the North and South Equatorial Currents which flow also toward the West, the vessel is carried westward with respect to the deep waters by both the wind and the surface current and large wire angles result. In the countercurrent, the flow is directed toward the East but the wind, as before, toward the West (during Cruise II). The resultant drift of the vessel with respect to the deep water is small and small wire angles result.

The wire angles are consistent with the existence of an eddy at the northern boundary of the countercurrent on the eastern section. Large wire angles were encountered through the southern lobe of the eddy where the current was directed West. Relatively small wire angles were recorded at the stations at 13°N and 14°N located within the easterly flow of the northern lobe of the eddy. The wind velocity did not alter appreciably across the eddy. The large wire angles at 11°N and 12°N may indicate that the center of the eddy is incorrectly located on the dynamic height and current profiles.

Larger wire angles were encountered in the vicinity of the equator than in the swiftest parts of the North Equatorial Current under comparable wind conditions. Therefore, the South Equatorial Current was probably flowing more swiftly than the North Equatorial Current.

DISCUSSION

Upwelling is occurring in the immediate vicinity of the equator on both station lines. This is evidenced, for example, by the high phosphate concentrations and low temperatures in the surface layer above the equator. This upwelling results from a divergence of the pure wind drift current along the equator.

An abrupt change in surface temperature indicated on the thermograph traces and occurring over deepenings of the homogenous surface layer indicate surface convergence and sinking. The regions of sinking do not coincide with the countercurrent boundary.

The other data indicate pronounced sinking motion at the surface temperature "discontinuity". The surface water rich in phosphate, for example, extends farther north on the eastern than on the western section, the .6 µg at./l. isopleth being found at about 4°N on the former and between 2°N and 3°N on the latter. This suggests that upwelled water is descending farther from the equator on the eastern than on the western section, which is consistent with the positions of the convergence along the two sections. This evidence alone would not be conclusive, however, due to a possible difference of phytoplankton activity (and other factors) at the two locations.

A cellular circulation is indicated. On both sections, surface divergence and upwelling is occurring at the equator and downward motion at a convergence some distance to the North. At and near the sea surface, water is moving from the equatorial divergence northward to the convergence

and a compensating equatorward flow very likely develops at a slightly greater depth.

Apparently there is a circulation cell to the north of and immediately adjacent to the equator which is in some respects similar to that described by Sverdrup (1938) for the California coastal waters during periods of upwelling. In our case, the plane of the equator acts as a "coastline". The intensity of this circulation will depend on the relatively local wind conditions as will the position of the convergent zone.

At the northern boundary of the countercurrent there is no evidence of a major upwelling. That the thermocline approaches nearest to the surface at this boundary is evident. Defant (1936) explains that this must be true in the presence of the existing horizontal currents. It is necessary to the dynamic balance within northern hemisphere currents that relatively dense water lie to the left of an observer facing downstream.

There is a horizontal eddy at the north boundary of the countercurrent on the eastern station line. Its precise size is not known for there is no assurance that the SMITH crossed along its greatest diameter.

The countercurrent may "meander" as does the Atlantic Gulf Stream. An eddy of the size encountered at the countercurrent boundary was probably formed in the way that eddies of comparable size are formed along the boundaries to the Atlantic Gulf Stream as described by Iselin (1948). According to Iselin, "These eddies appear to be actual segments of the main stream that have broken away from the parent body when the Gulf Stream, in its meanderings, formed an excessively large loop in its path". The existence of this eddy is, therefore, indirect evidence that the countercurrent "meanders".

ACKNOWLEDGMENT

This report has resulted from the combined efforts of many persons. Herbert J. Mann was largely responsible for the successful occupation of all hydrographic stations planned. Richard V. Mead and Mary Lynne Godfrey processed the physical data and Winifred Tseu the chemical data. Muriel Kanagawa assisted in the data processing and Mary Alice Hunt drafted the figures.

The author gratefully acknowledges the efforts of these and many others.

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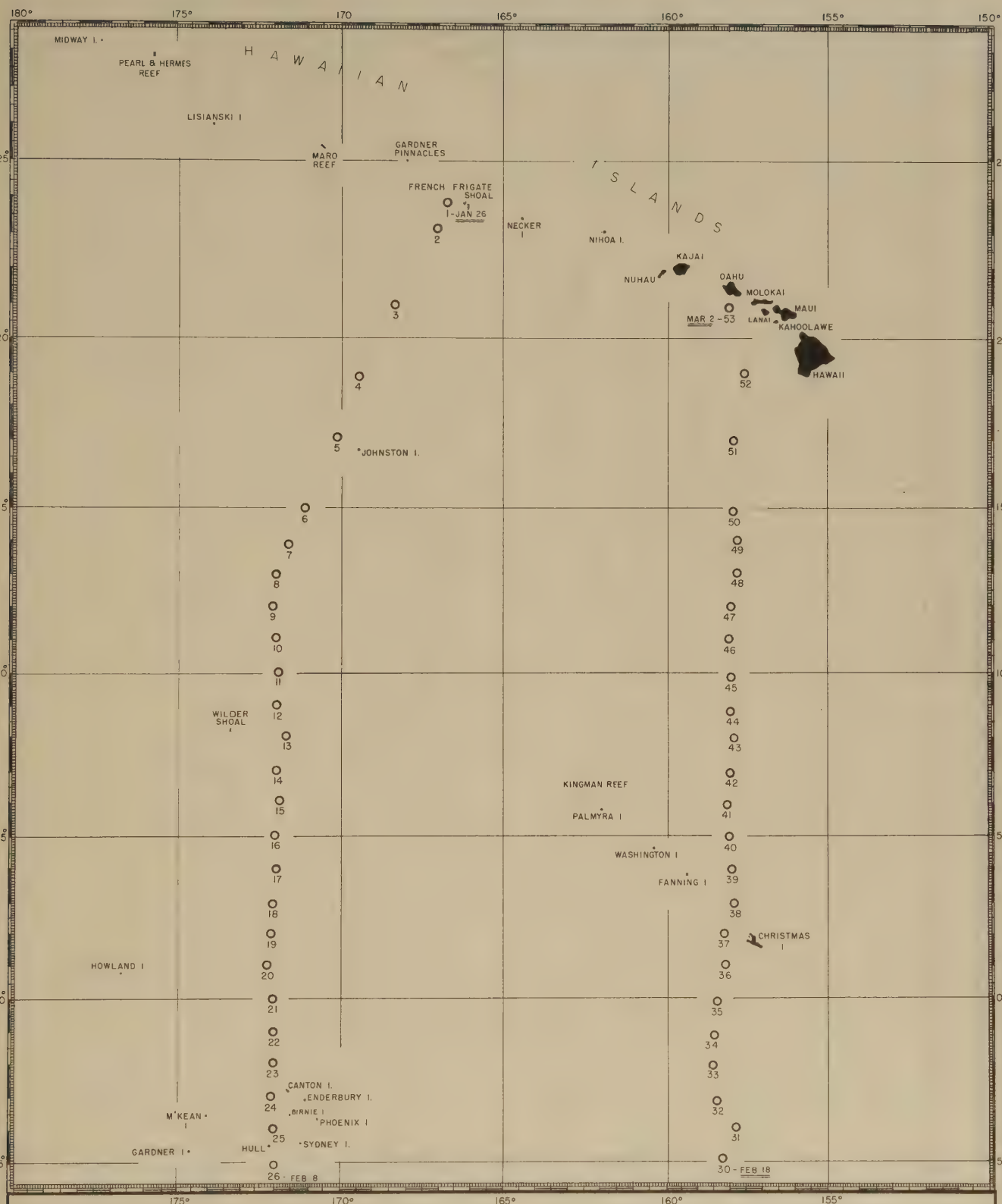


FIG. I. STATION POSITIONS OF THE M/V HUGH M. SMITH FOR CRUISE II. JANUARY—MARCH, 1950.

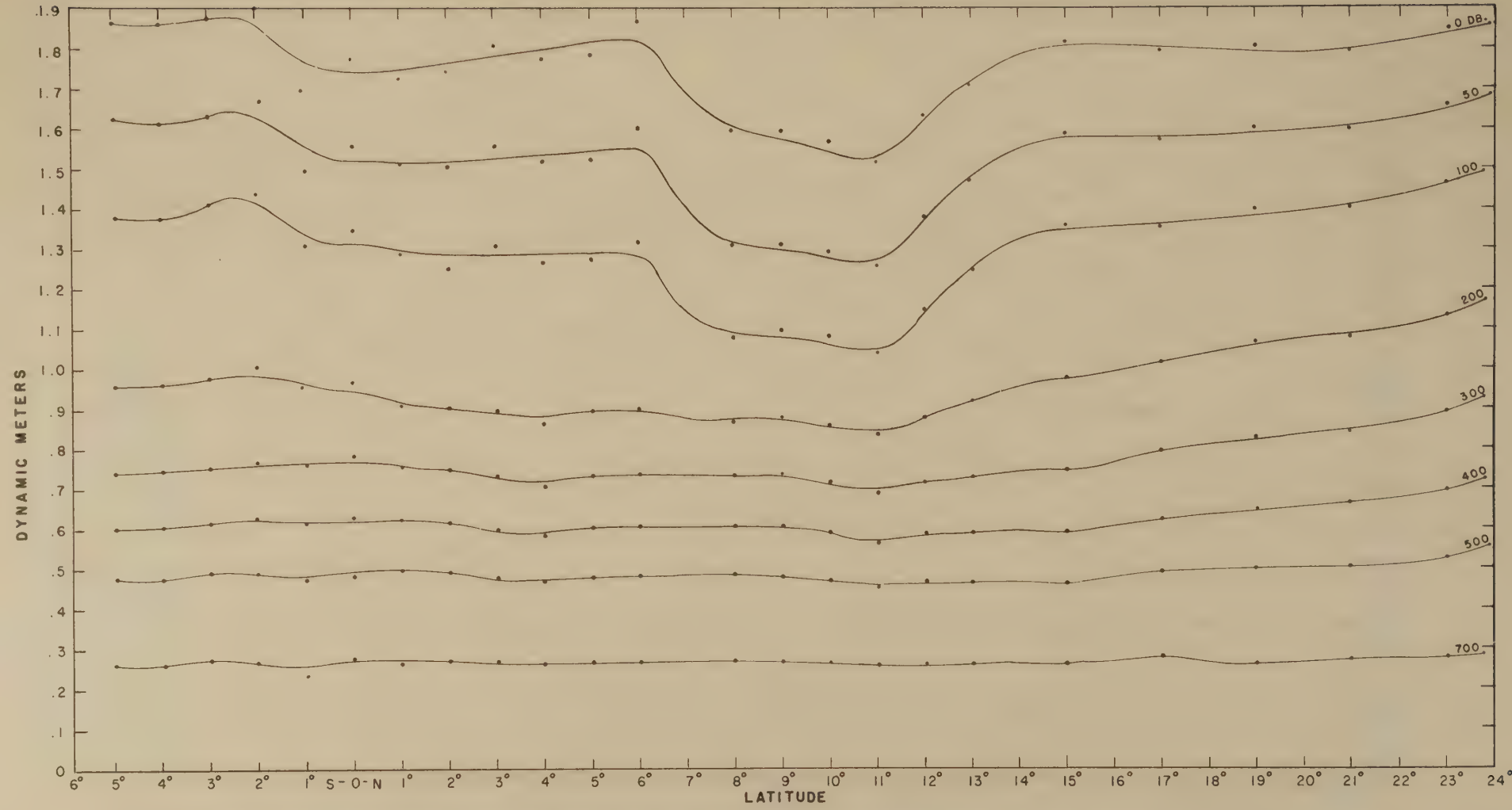


FIG. 2 SMOOTHED PROFILES OF ISOBARIC SURFACES RELATIVE TO THE 1000 DECIBAR SURFACE. CRUISE II M/V HUGH M.SMITH STATIONS Nº 1 – 26. POINTS ARE THE RESULT OF THE DYNAMIC COMPUTATIONS.

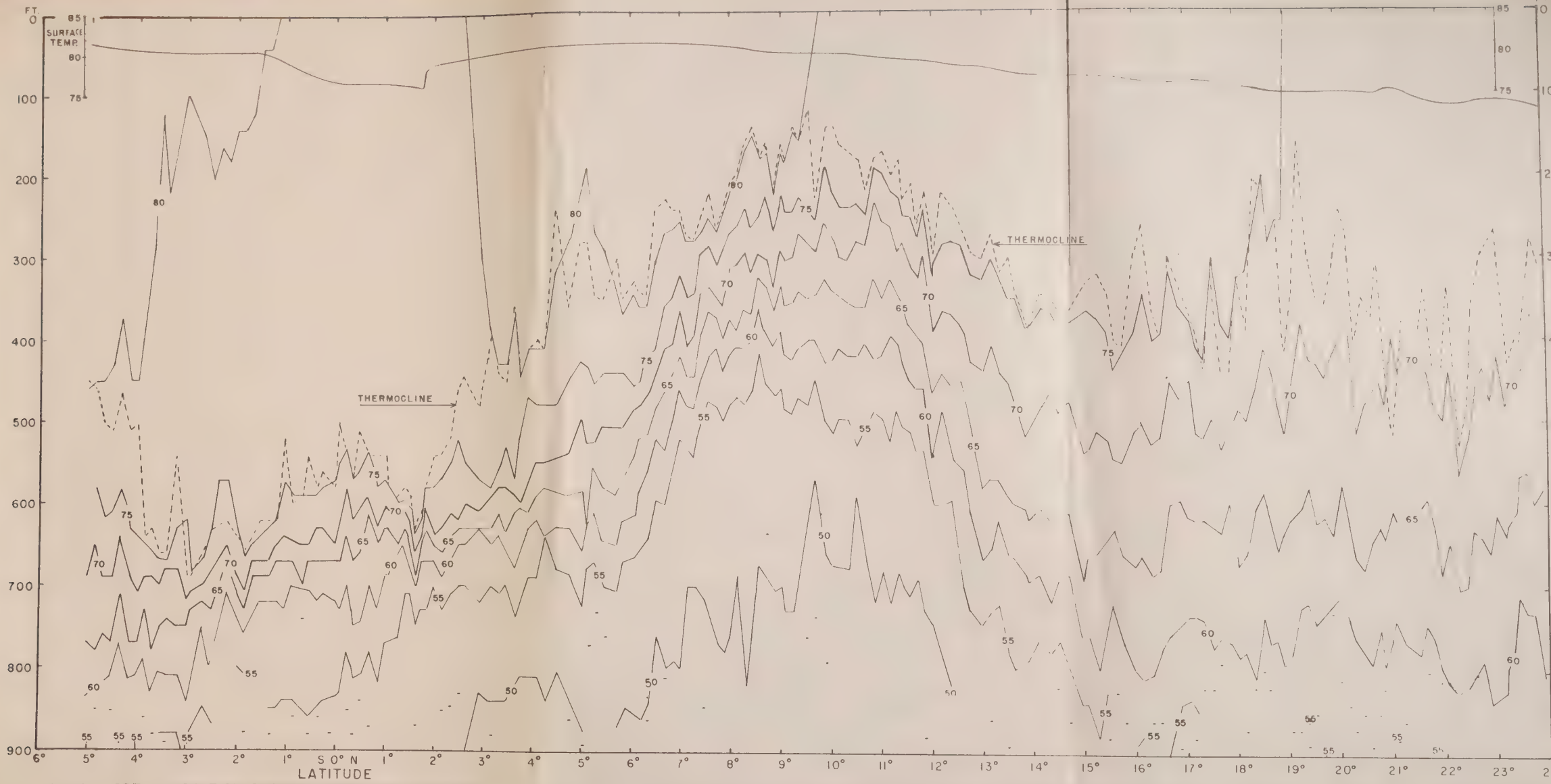


FIG. 4. VERTICAL SECTION SHOWING ISOTHERMS BASED ON 900 FT. BATHYTHERMOGRAPH OBSERVATIONS TAKEN DURING HYDROGRAPHIC STATION LINE I THROUGH 26 (SEE FIG. 1). SHORT HORIZONTAL DASHES REPRESENT MAXIMUM DEPTH OF OBSERVATION WHEN LESS THAN 900 FT. CURVE NEAR TOP OF SECTION SHOWS CORRESPONDING SURFACE TEMPERATURES ACCORDING TO INSET TEMPERATURE SCALE. JANUARY 26 TO FEBRUARY 8, 1950.

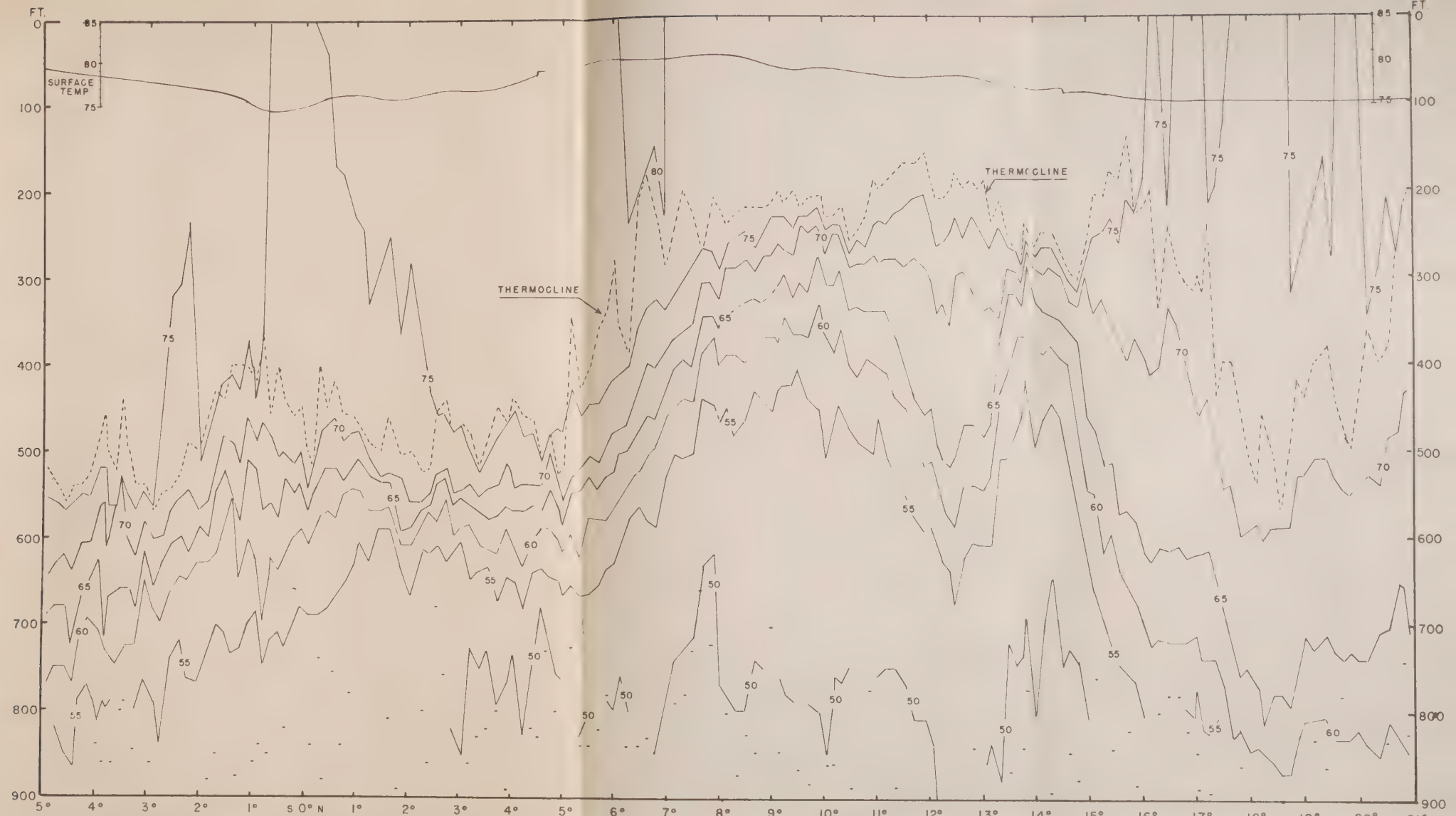


FIG 5 VERTICAL SECTION SHOWING ISOTHERMS BASED ON 900 FT. BATHYTHERMOGRAPH OBSERVATIONS TAKEN DURING HYDROGRAPHIC STATION LINE 30 THROUGH 53 (SEE FIG. 1) SHORT HORIZONTAL DASHES REPRESENT MAXIMUM DEPTH OF OBSERVATION WHEN LESS THAN 900 FT. CURVE NEAR TOP OF SECTION SHOWS CORRESPONDING SURFACE TEMPERATURES ACCORDING TO INSET TEMPERATURE SCALE. FEBRUARY 18 TO MARCH 1, 1950.

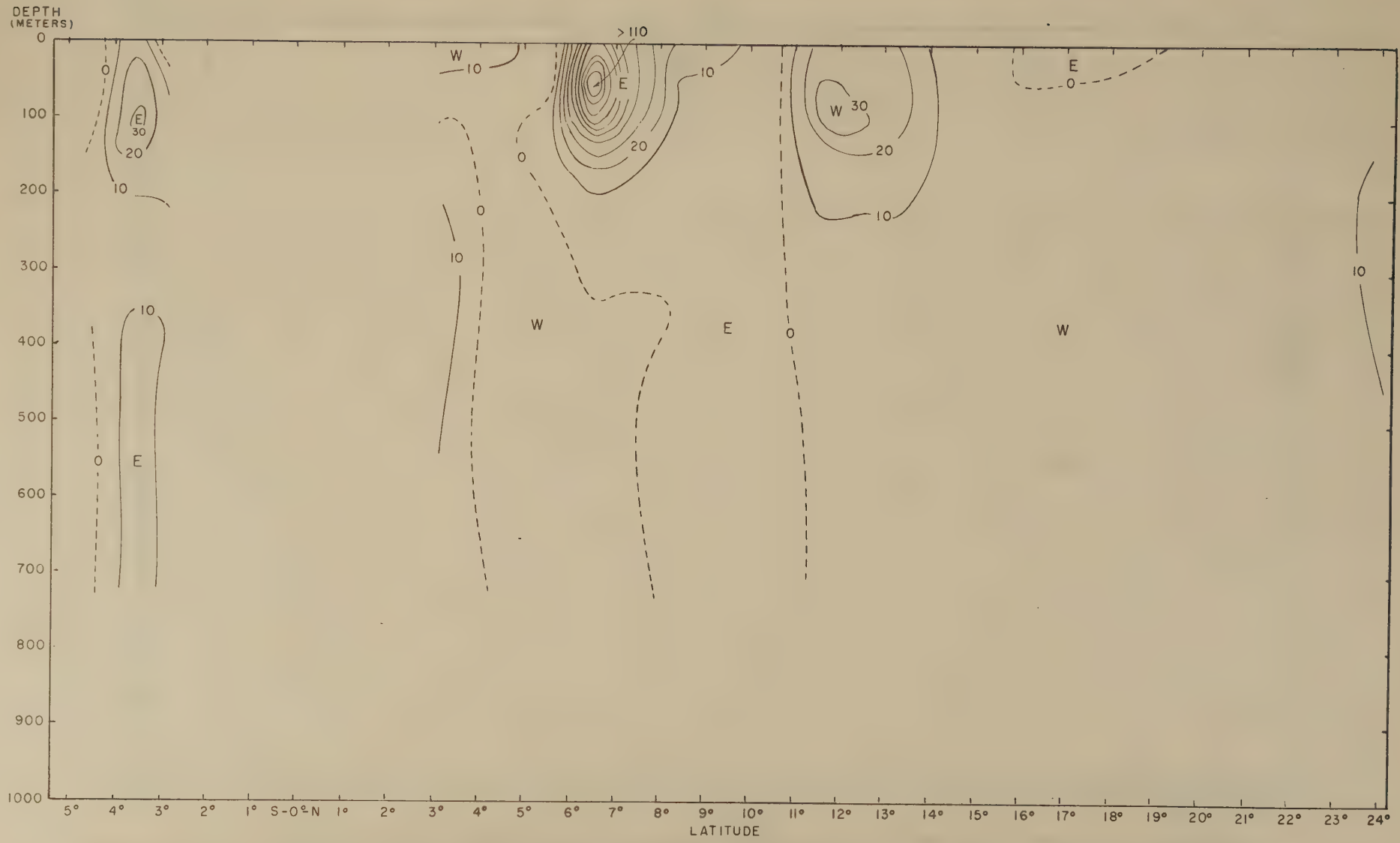


FIG. 6. VERTICAL SECTION OF CURRENTS ASSOCIATED WITH THE DISTRIBUTION OF MASS. M/V HUGH M. SMITH CRUISE II STATIONS 1–26. COMPUTATIONS BASED ON SMOOTHED DYNAMIC CONTOURS (SEE FIG. 2). CURRENT SPEED INDICATED IN CM/SEC.

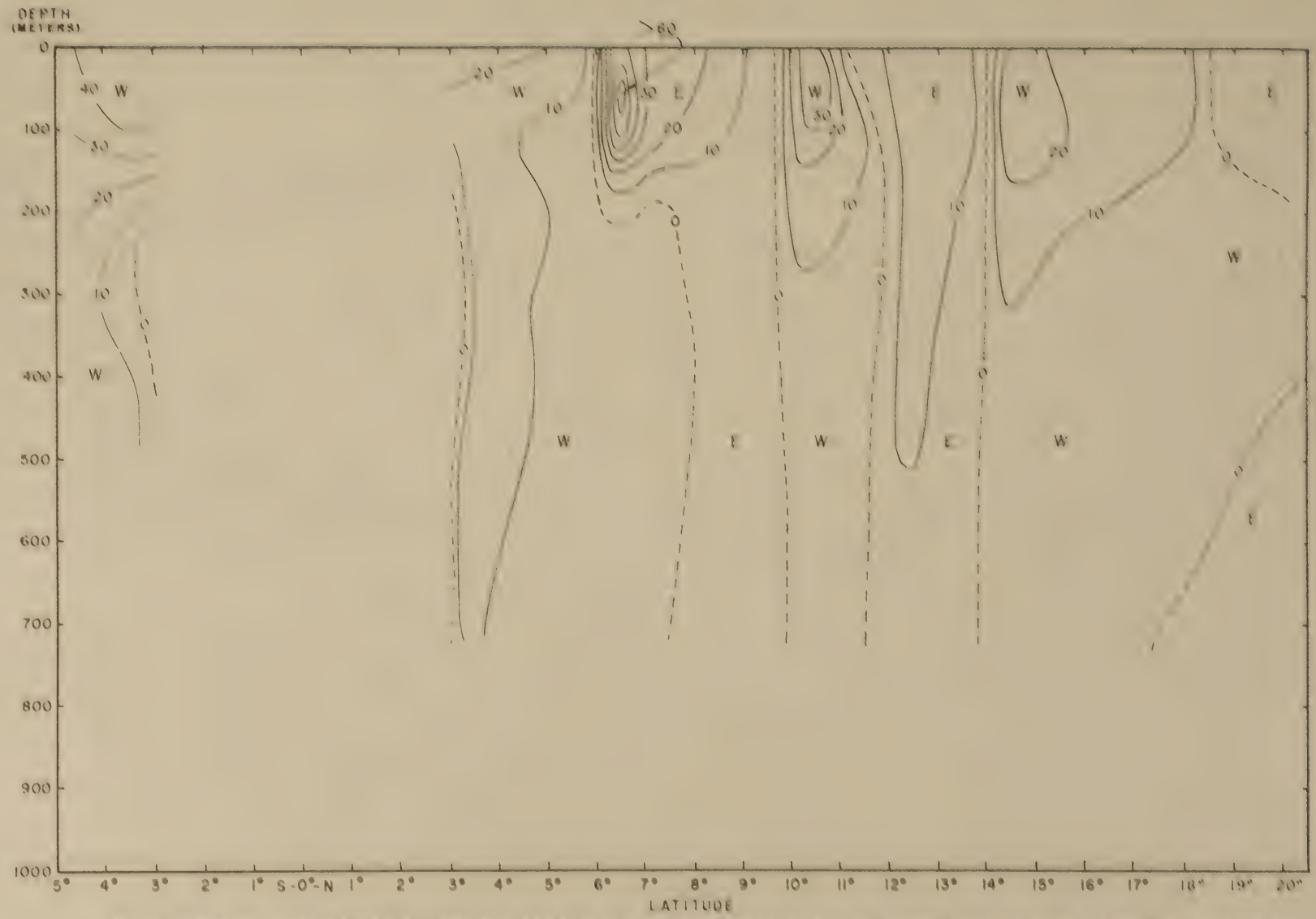


FIG. 7 VERTICAL SECTION OF CURRENTS ASSOCIATED WITH THE DISTRIBUTION OF MASS. M/V HUGH M. SMITH CRUISE II STATIONS 30-53. COMPUTATIONS BASED ON SMOOTHED DYNAMIC CONTOURS, (SEE FIG. 3). CURRENT SPEED INDICATED IN CM/SEC.

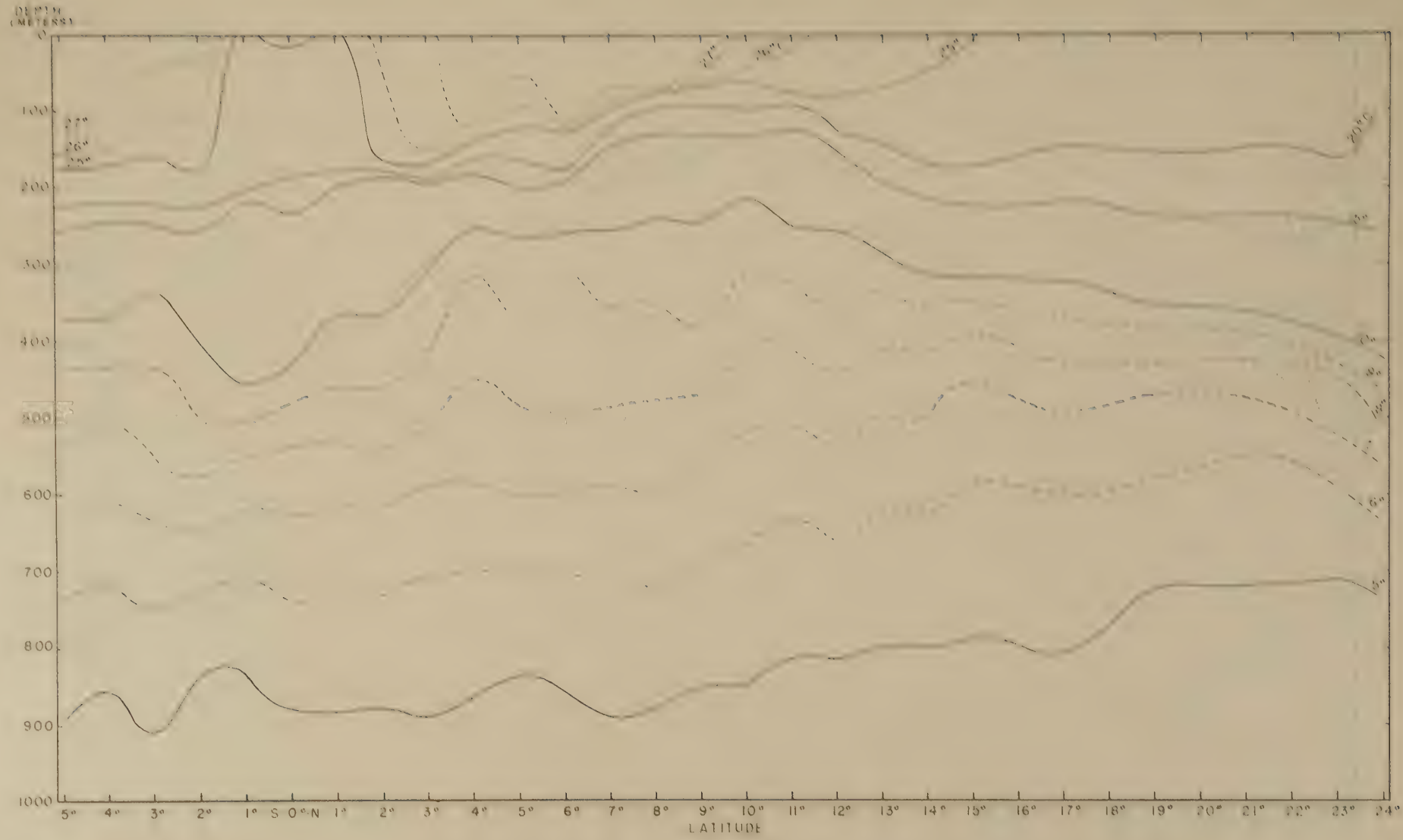


FIG. 8. VERTICAL TEMPERATURE SECTION. M/V HUGH M. SMITH CRUISE II STATIONS 1 – 26
EVERY DEGREE CENTIGRADE BETWEEN 5°C AND 10°C AND GREATER THAN 25°C ENTERED AS DASHED ISOTHERMS.

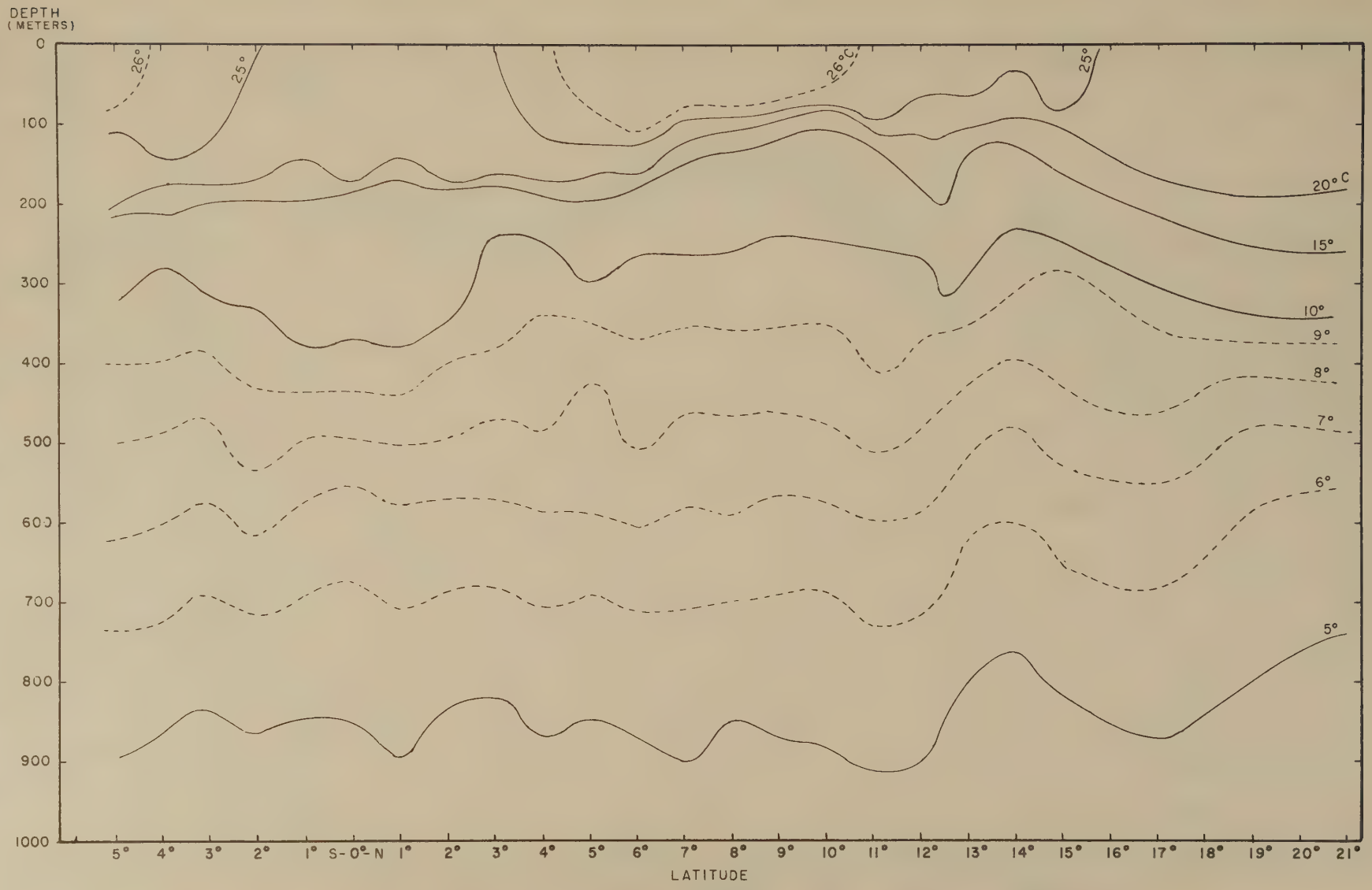


FIG. 9 VERTICAL TEMPERATURE SECTION. M/V HUGH M. SMITH CRUISE II STATIONS 30-53 EVERY DEGREE CENTIGRADE BETWEEN 5°C AND 10°C AND GREATER THAN 25°C ENTERED AS DASHED ISOTHERMS.

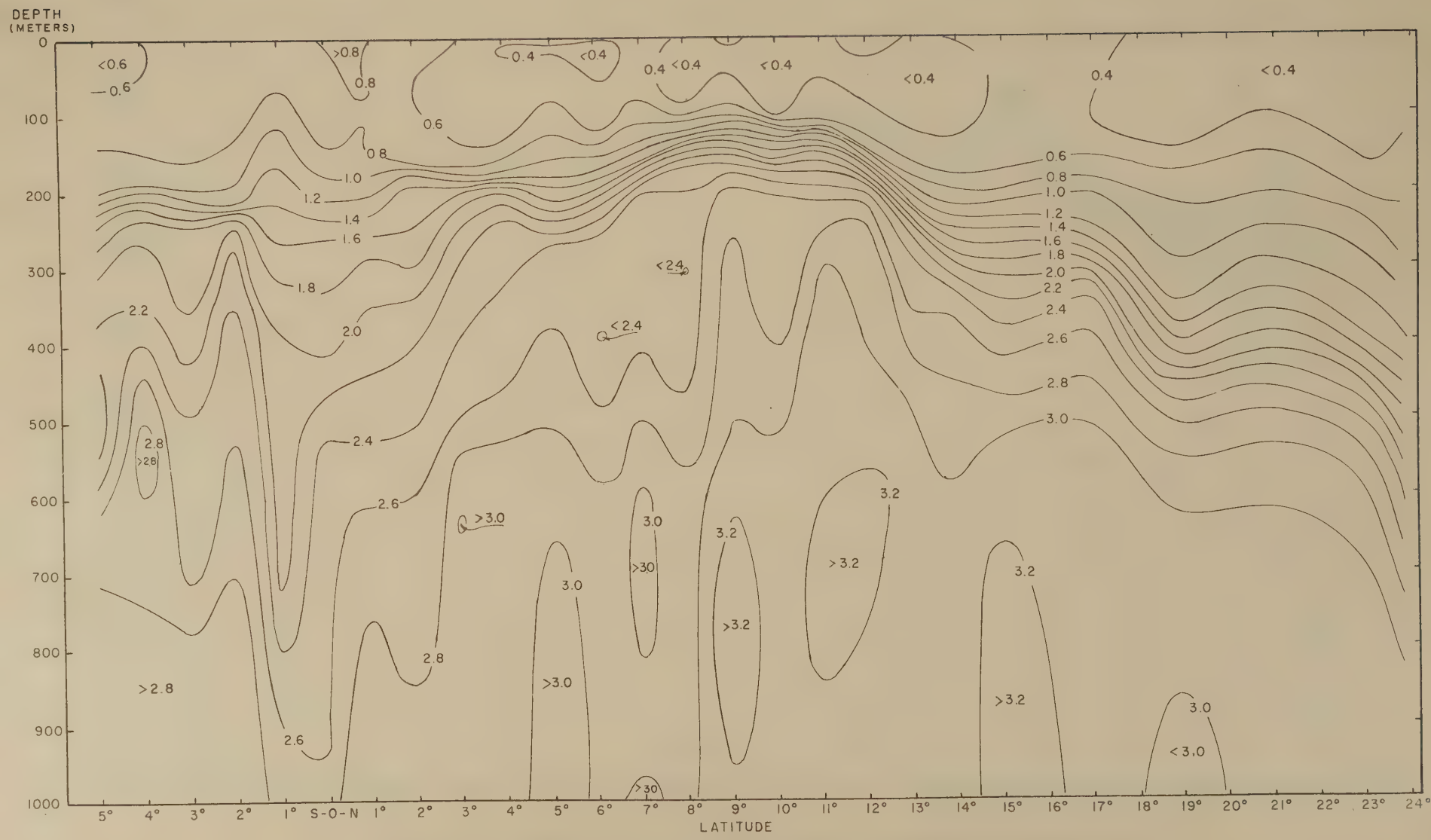


FIG. 10 VERTICAL PHOSPHATE SECTION M/V HUGH M. SMITH CRUISE II STATIONS 1 – 26
CONCENTRATIONS INDICATED IN μG AT/L OF PO_4-P

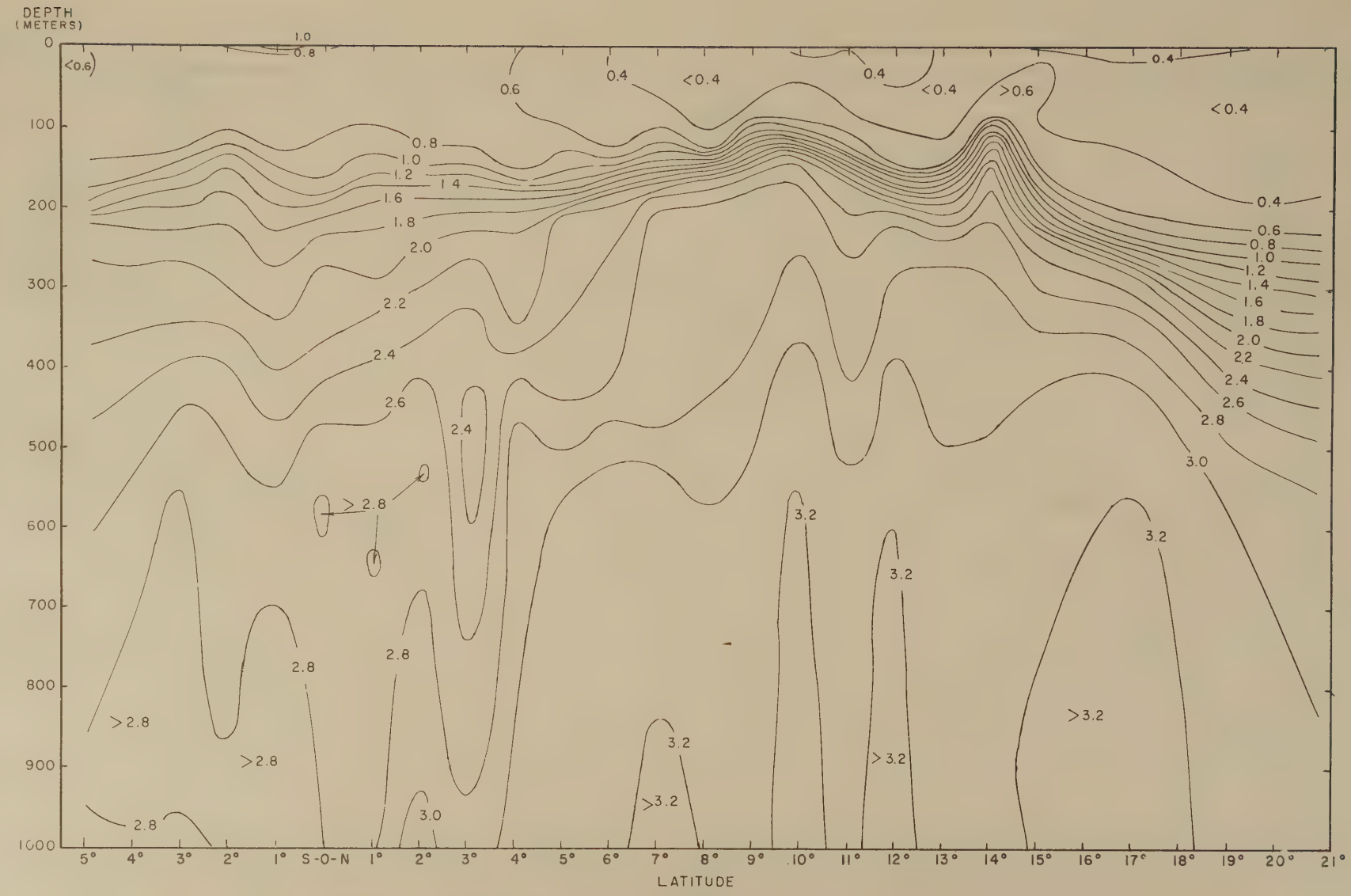


FIG. II. VERTICAL PHOSPHATE SECTIONS M/V HUGH M. SMITH CRUISE II STATIONS 30-53.
CONCENTRATIONS INDICATED IN μG AT/L OF PO_4-P

FIG. 12. VERTICAL SALINITY SECTION M/V HUGH M. SMITH CRUISE II STATIONS 1 – 26
ISOHALINES DRAWN FOR INTERVALS OF .2 ‰

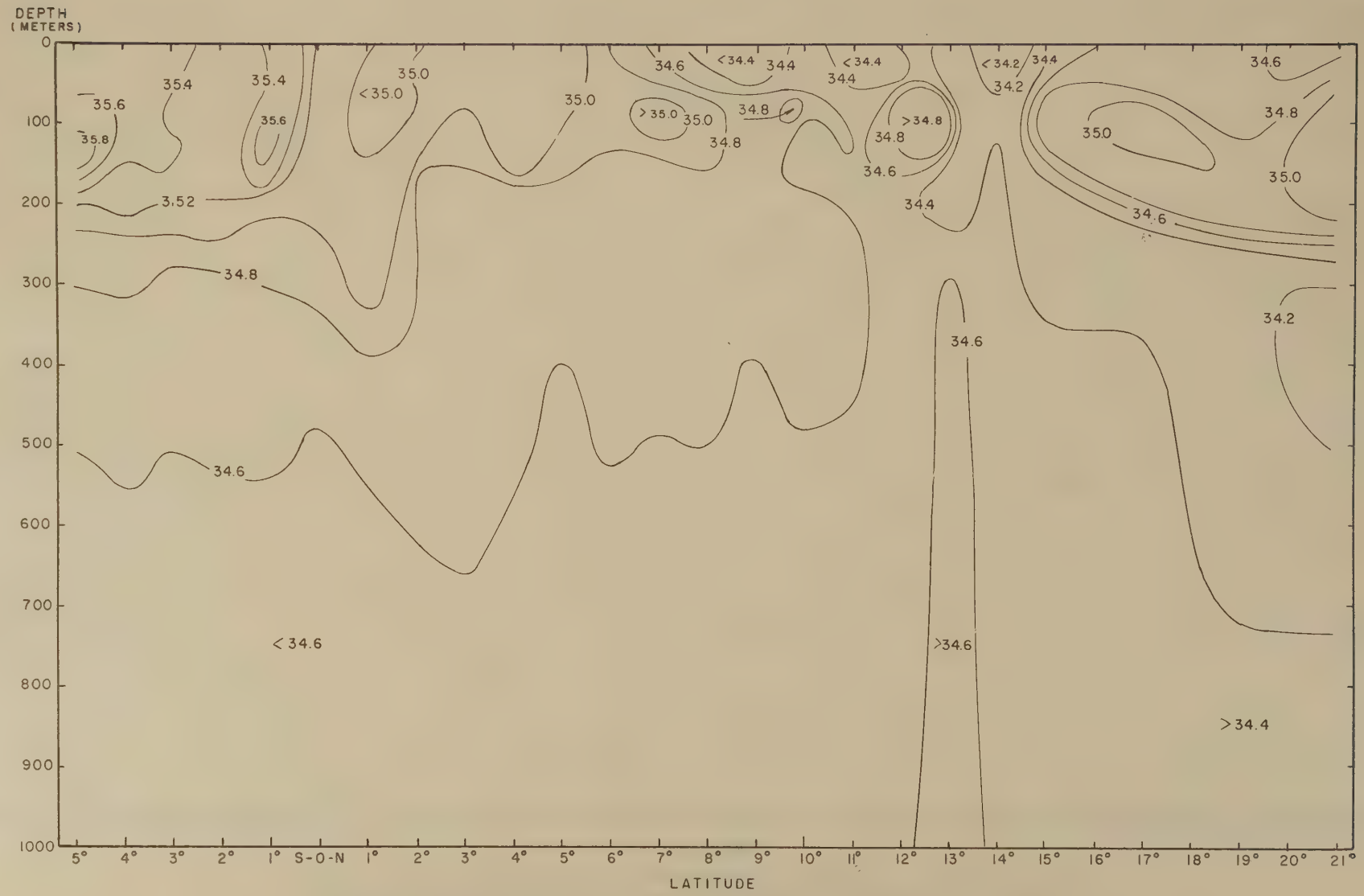


FIG. 13. VERTICAL SALINITY SECTION M/V HUGH M. SMITH. CRUISE II STATIONS 30–53
ISOHALINES DRAWN FOR INTERVALS OF 2 ‰.

FIG. 14. VERTICAL OXYGEN SECTION M/V HUGH M. SMITH CRUISE II STATIONS 1-26
CONCENTRATIONS INDICATED IN ML/L. DASHED LINES FOLLOW LEVELS OF
MINIMUM OXYGEN CONTENT.

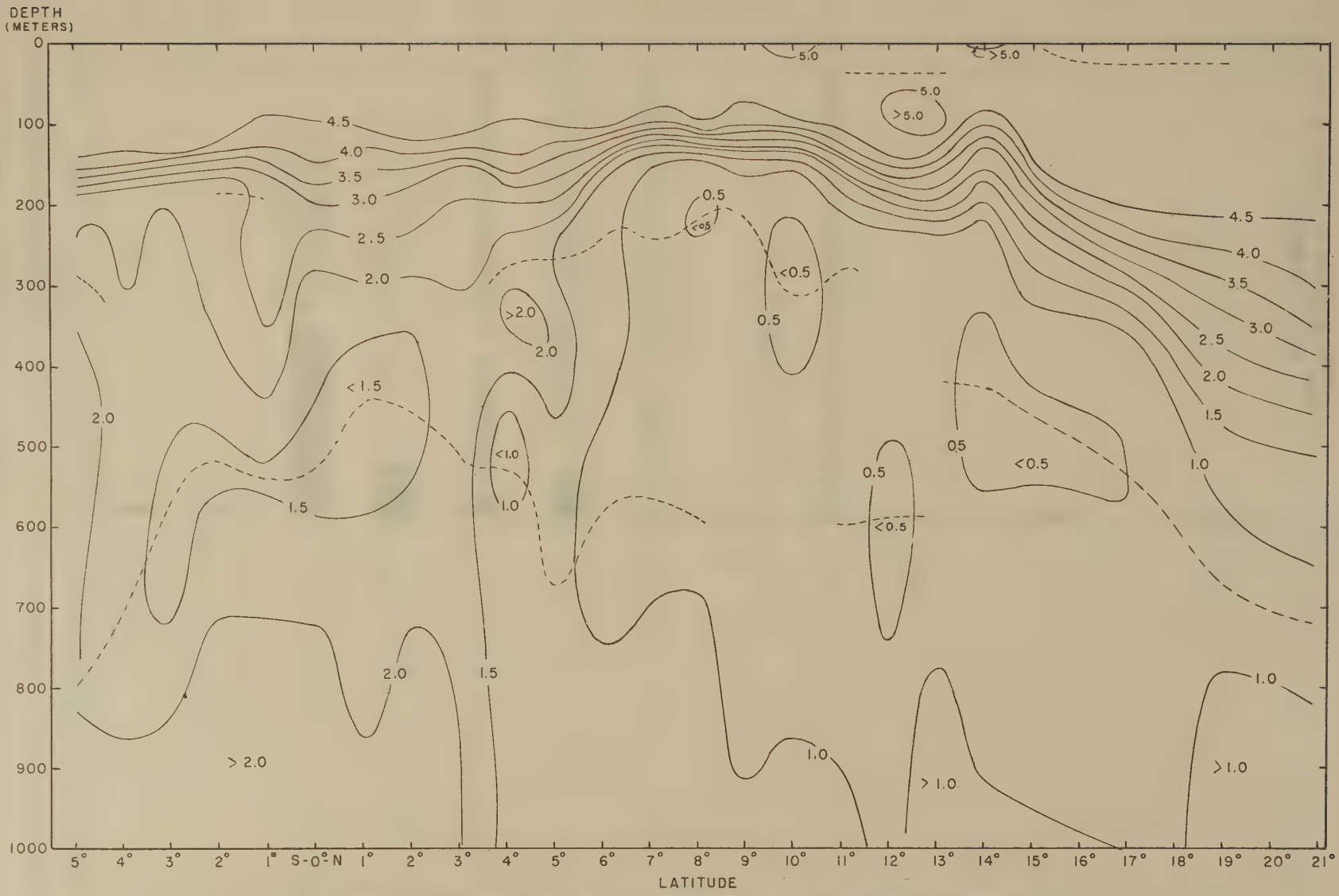


FIG. 15 VERTICAL OXYGEN SECTION M/V HUGH M. SMITH CRUISE II STATIONS 30-53. CONCENTRATIONS INDICATED IN ML/L. DASHED LINES FOLLOW LEVELS OF MINIMUM OXYGEN CONTENT.

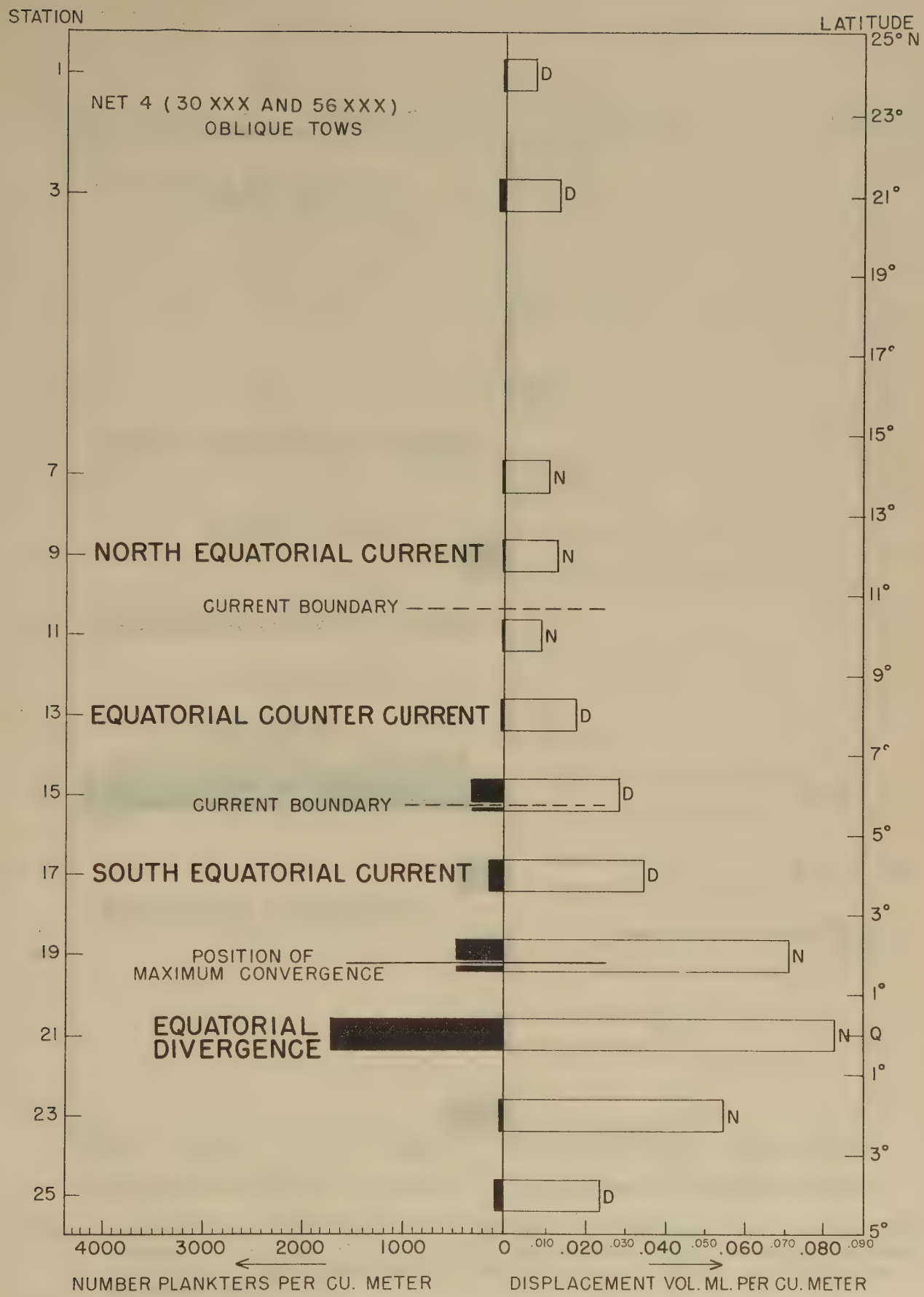


FIG. 16. LATITUDINAL DISTRIBUTION OF ZOOPLANKTON ABUNDANCE. M/V HUGH M. SMITH CRUISE II STATIONS 1–26. CURRENT BOUNDARIES AND THE MAJOR SURFACE DIVERGENCE AND CONVERGENCE ARE INDICATED. D AND N REPRESENT DAY OR NIGHT HAULS.

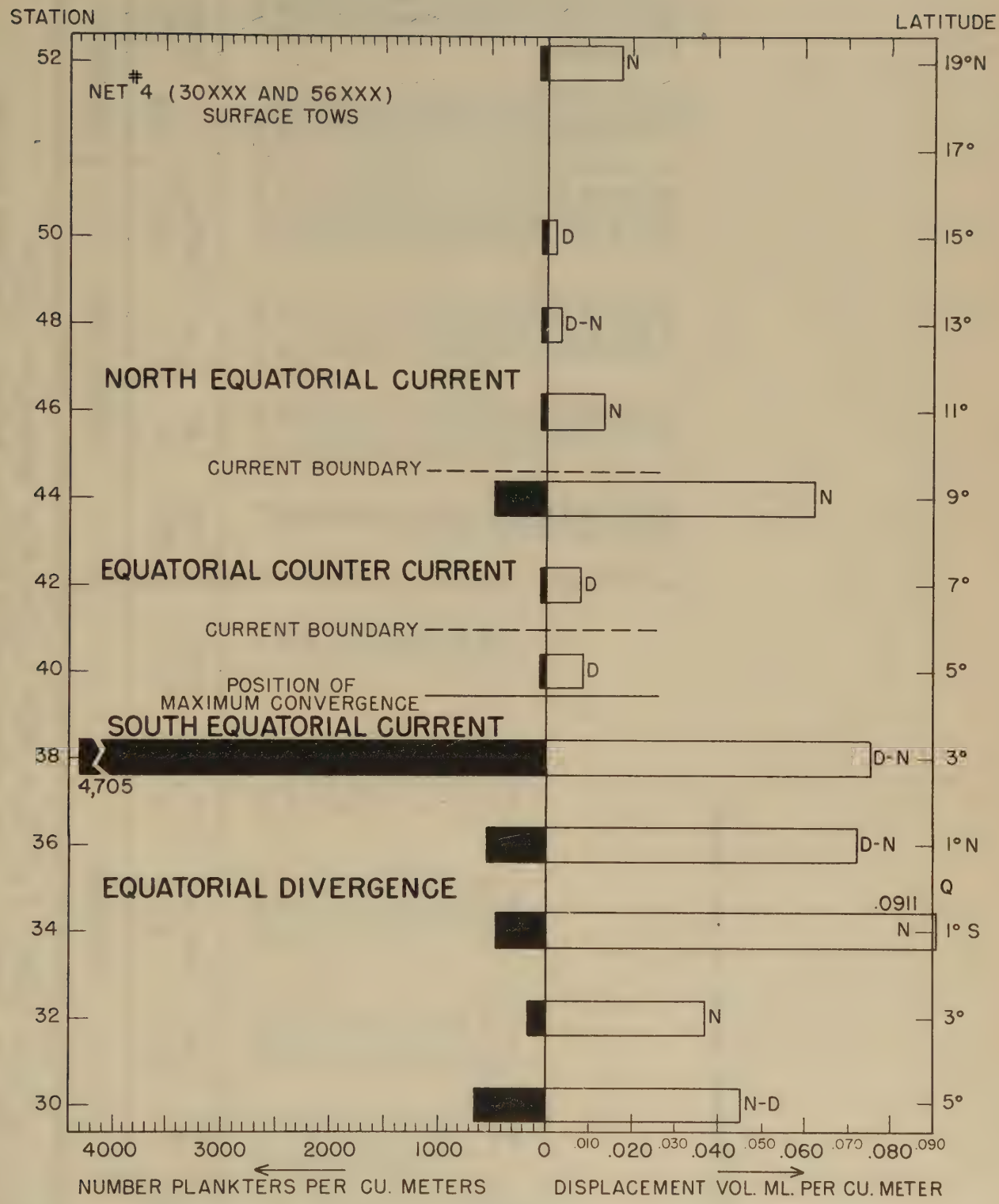
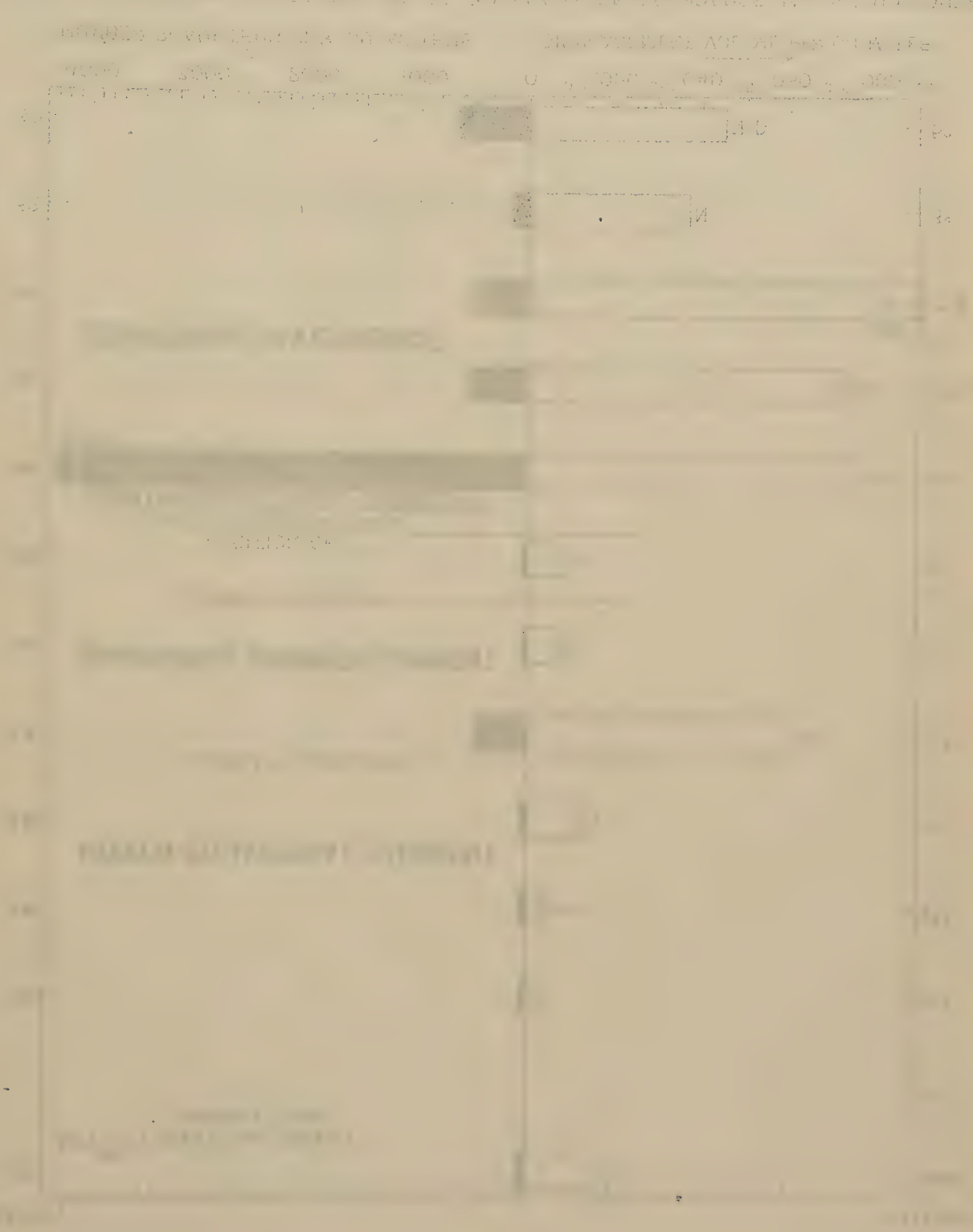


FIG. 17. LATITUDINAL DISTRIBUTION OF ZOOPLANKTON ABUNDANCE. M/V HUGH M. SMITH CRUISE II STATIONS 30-53. CURRENT BOUNDARIES AND THE MAJOR SURFACE DIVERGENCE AND CONVERGENCE ARE INDICATED. D AND N REPRESENT DAY OR NIGHT HAULS.



STATION 1

23°54'N, 166°51'W January 26, 1950 Messenger time: 2107 GCT Weather: Scattered low cloud
Wind: 110°, 5 kt. Sea: < 1 ft. Wire angle: 20° Depth of Observation: 893 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	22.60	35.26	24.27	4.91	.40	0	22.60	35.26	24.26	366.7	.0000
9	22.60	35.25	24.26	5.02	.28	10	22.60	35.25	24.25	367.7	.0367
44	22.60	35.25	24.26	4.92	.26	20	22.60	35.25	24.25	368.0	.0735
87	22.30	35.25	24.34	4.75	.33	30	22.60	35.25	24.25	368.4	.1103
174	18.12	34.90	25.18	4.63	.48	50	22.60	35.25	24.25	369.2	.1841
262	14.95	34.56	25.66	4.74	.72	75	22.43	35.25	24.30	365.6	.2760
351	11.78	34.33	26.13	4.68	.98	100	22.13	35.24	24.38	359.0	.3668
530	7.52	34.05	26.62	3.36	2.00	150	19.30	35.09	25.03	298.9	.5319
711	5.15	34.16	27.01	1.53	2.72	200	17.18	34.73	25.28	276.0	.6763
893	4.14	34.25	27.09	1.02	3.08	250	15.35	34.59	25.60	247.1	.8078
---	---	---	---	---	---	300	13.50	34.46	25.89	219.7	.9251
						400	10.48	34.23	26.28	182.7	1.1276
						500	8.15	34.07	26.53	158.5	1.2993
						600	6.36	34.07	26.79	134.2	1.4466
						700	5.25	34.15	26.99	115.1	1.5722
						800	4.60	34.26	27.15	99.9	1.6806
						1000*	4.00	34.49	27.40	76.5	1.8586

* Extrapolated values at this depth.

STATION 2

23°10'N, 167°N January 27, 1950 Messenger time: 0504 GCT Weather: Scattered low cloud
Wind: Calm Sea: 0 Wire angle: 0° Depth of Observation: 1482 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	23.12	35.32	24.16	4.68	.40	0	23.12	35.32	24.16	376.3	.0000
10	23.12	35.32	24.16	4.68	.27	10	23.12	35.32	24.16	376.7	.0376
49	23.02	35.28	24.16	4.67	.21	20	23.10	35.32	24.17	376.7	.0753
98	23.02	35.30	24.18	4.74	.24	30	23.07	35.31	24.17	376.8	.1130
196	18.23	34.90	25.16	4.38	.52	50	23.02	35.28	24.16	378.4	.1885
294	13.02	34.36	25.91	4.24	1.08	75	23.06	35.30	24.16	379.0	.2833
392	10.10	34.14	26.28	4.05	1.35	100	23.02	35.30	24.18	378.8	.3782
590	6.13	34.13	26.87	1.66	2.77	150	20.77	35.14	24.68	332.1	.5567
788	4.62	34.31	27.19	1.01	3.08	200	17.85	34.87	25.23	281.4	.7108
986	4.02	34.47	27.39	1.69	3.08	250	14.95	34.59	25.68	238.4	.8414
1482	2.77	34.56	27.57	1.24	2.94	300	12.85	34.34	25.93	215.4	.9555
						400	9.90	34.14	26.31	179.5	1.1541
						500	7.54	34.11	26.66	146.5	1.3182
						600	5.95	34.14	26.90	123.6	1.4542
						1700	5.08	34.22	27.06	107.7	1.5707
						800	4.55	34.32	27.21	94.9	1.6729
						1000	3.97	34.48	27.40	78.0	1.8473

STATION 3

20°59'N, 168°16'W January 28, 1950 Messenger time: 0007 GCT Weather: Scattered low cloud
Wind: 010°, 4 kt. Sea: ∠1 ft. Wire angle: 0° Depth of Observation: 1480 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/l)	PO_4-P (µg at/l)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\,\delta$	ΔD (dyn.m.)
0	23.56	35.25	23.98	4.94	.30	0	23.56	35.25	23.98	393.8	.0000
10	23.50	35.21	23.97	4.85	.37	10	23.52	35.21	23.96	395.7	.0394
49	23.40	35.25	24.03	4.84	.38	20	23.50	35.23	23.98	394.4	.0790
98	23.04	35.23	24.12	4.84	.40	30	23.45	35.24	24.00	392.7	.1183
195	17.11	34.78	25.34	4.48	.76	50	23.40	35.25	24.23	391.3	.1967
292	12.62	34.34	25.98	----	---	75	23.26	35.25	24.07	388.1	.2942
390	8.89	34.09	26.44	3.67	1.83	100	23.03	35.22	24.11	385.1	.3911
586	5.70	34.18	26.96	1.51	2.96	150	19.93	34.99	24.79	321.8	.5686
784	4.72	34.36	27.22	1.08	3.10	200	16.88	34.76	25.30	266.9	.7164
982	4.02	34.47	27.39	1.58	3.14	250	14.50	34.53	25.73	233.5	.8422
1480	2.74	34.56	27.58	1.89	2.92	300	12.29	34.30	25.96	207.7	.9531
						400	8.60	34.09	26.49	162.2	1.1392
						500	6.59	34.11	26.80	132.9	1.2877
						600	5.61	34.19	26.98	115.7	1.4128
						700	5.10	34.29	27.12	102.7	1.5229
						800	4.67	34.37	27.23	92.5	1.6213
						1000	3.93	34.48	27.40	77.7	1.7930

STATION 4

18°54'N, 169°22'W January 28, 1950 Messenger time: 1824 GCT Weather: Broken low cloud
Wind: 350°, 27 kt. Sea: 8 - 12 ft. Wire angle: 50° Depth of Observation: 1272 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	24.00	35.14	23.76	4.91	.35	0	24.00	35.14	23.77	414.0	.0000
78	23.79	35.23	23.90	4.81	.27	10	24.00	35.15	23.77	413.8	.0413
107	23.30	35.25	24.06	4.76	.25	20	24.00	35.17	23.79	412.7	.0827
143	20.96	35.14	24.63	4.33	.41	30	24.00	35.18	23.79	412.4	.1240
217	16.06	34.65	25.48	4.30	.80	50	23.97	35.20	23.82	410.7	.2063
293	12.57	34.34	25.99	4.47	1.00	75	23.81	35.23	23.89	405.1	.3083
370	9.43	34.14	26.39	3.99	1.33	100	23.71	35.25	23.94	401.6	.4094
524	6.23	34.14	26.87	1.80	2.68	150	20.45	35.10	24.74	326.8	.5922
681	5.26	34.36	27.16	1.18	3.08	200	17.00	34.75	25.34	270.3	.7422
842	4.87	34.45	27.28	1.45	3.02	250	14.44	34.49	25.72	235.1	.8692
1272	3.31	34.52	27.49	1.70	2.96	300	12.24	34.32	26.03	205.5	.9800
						400	8.64	34.11	26.50	161.3	1.1645
						500	6.90	34.12	26.76	136.6	1.3144
						600	5.85	34.25	27.18	114.1	1.4407
						700	5.17	34.37	27.28	97.7	1.5474
						800	4.61	34.43	27.19	87.6	1.6408
						1000	3.90	34.49	27.41	76.5	1.8064

STATION 5

17°03'N, 170°07'W January 29, 1950 Messenger time: 1047 GCT Weather: Broken low cloud
Wind: 040°, 28 kt. Sea: 8 - 12 ft. Wire angle: 50° Depth of observation: 1193 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	24.36	34.94	23.51	4.86	.44	0	24.36	34.94	23.51	438.7	.0000
99	23.30	34.92	23.81	4.85	.40	10	24.34	34.94	23.51	438.7	.0439
132	20.78	34.88	24.48	4.43	.49	20	24.33	34.94	23.52	438.7	.0877
197	16.71	34.60	25.29	3.94	.87	30	24.34	34.94	23.51	439.3	.1316
264	12.09	34.29	26.04	4.11	1.36	50	24.32	34.94	23.52	439.6	.2195
329	9.83	34.31	26.46	1.79	2.30	75	24.30	34.93	23.52	440.8	.3297
460	5.66	34.29	26.81	1.19	2.83	100	24.09	34.92	23.57	436.5	.4396
591	6.06	34.40	27.09	1.02	3.11	150	19.85	34.84	24.70	330.3	.6321
739	5.34	34.42	27.20	1.00	3.12	200	16.45	34.57	25.33	270.9	.7831
1193	3.48	34.51	27.47	1.46	3.11	250	12.85	34.33	25.92	215.0	.9052
						300	10.66	34.26	26.28	181.4	1.0048
						400	8.46	34.26	26.64	147.5	1.1703
						500	6.91	34.33	26.92	121.2	1.3055
						600	6.02	34.40	27.09	105.4	1.4196
						700	5.52	34.41	27.17	99.3	1.5228
						800	5.03	34.43	27.24	92.6	1.6195
						1000	4.19	34.47	27.37	81.4	1.7951

STATION 6

15°00'N, 171°06'W January 30, 1950 Messenger time: 1st Cast: 0312 GCT 2nd Cast: 0407 GCT (Bottom bottle did not trip on first cast) Weather: Broken low cloud Wind: 080°, 20 kt. Sea: 5 - 8 ft. Wire angle: Both Casts: 25° Depth of observation: 1348 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.10	34.92	23.27	4.81	.46	0	25.10	34.92	23.27	461.5	.0000
9	25.02	34.88	23.26	4.73	.42	10	25.00	34.88	23.27	462.1	.0461
43	24.90	34.90	23.32	4.71	.42	20	24.95	34.88	23.28	460.9	.0923
86	24.89	34.94	23.35	4.75	.46	30	24.92	34.88	23.30	460.1	.1384
172	20.12	34.97	24.72	4.47	.58	50	24.90	34.90	23.31	459.2	.2303
258	12.62	34.27	25.92	3.53	1.51	75	24.90	34.93	23.34	457.9	.3450
345	9.07	34.18	26.48	2.48	2.21	100	24.70	34.95	23.41	451.7	.4590
522	6.40	34.45	27.09	.81	3.00	150	23.00	34.98	23.94	403.3	.6736
705	5.36	34.47	27.23	.86	3.23	200	16.90	34.78	25.39	265.9	.8417
888	4.58	34.49	27.34	1.08	3.25	250	13.08	34.30	25.85	221.6	.9642
1348	3.02	34.54	27.54	1.70	3.20	300	10.55	34.20	26.27	183.8	1.0661
						400	7.81	34.24	26.72	139.4	1.2287
						500	6.59	34.43	27.04	109.4	1.3539
						600	5.91	34.46	27.16	99.6	1.4591
						700	5.38	34.47	27.23	93.1	1.5562
						800	4.95	34.48	27.30	87.8	1.6474
						1000	4.18	34.51	27.40	78.3	1.8150

STATION 7

13°54'N 171°36'W January 30, 1950 Messenger time: 1332 GCT Weather: Scattered low cloud
Wind: 080°, 16 kt. Sea: 3 - 5 ft. Wire angle: 20° Depth of Observation: 1292 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.06	34.87	23.25	4.93	.42	0	25.06	34.87	23.25	463.9	.0000
8	25.04	34.83	23.22	4.76	.31	10	25.05	34.83	23.21	467.1	.0466
41	24.99	34.90	23.29	4.90	.31	20	25.02	34.85	23.24	464.8	.0932
82	24.90	34.90	23.32	4.85	.33	30	25.00	34.88	23.27	462.7	.1395
166	20.28	34.97	24.68	4.45	.54	50	25.00	34.90	23.28	462.2	.2320
250	12.52	34.33	25.99	3.70	1.42	75	25.00	34.90	23.28	463.2	.3478
334	9.40	34.40	26.16	1.40	2.46	100	24.58	34.93	23.43	449.8	.4621
504	7.02	34.45	27.01	.86	2.90	150	22.67	34.97	24.09	395.3	.6743
674	5.67	34.47	27.20	1.02	3.08	200	16.10	34.89	25.66	240.0	.8339
847	4.95	34.51	27.32	1.08	3.15	250	12.54	34.33	25.99	209.0	.9467
1292	3.31	34.54	27.51	1.66	3.04	300	10.40	34.37	26.41	169.1	1.0418
						400	8.20	34.43	26.82	131.1	1.1928
						500	7.09	34.45	26.99	115.0	1.3166
						600	6.20	34.46	27.13	103.3	1.4266
						700	5.52	34.48	27.22	94.1	1.5260
						800	5.00	34.50	27.30	87.2	1.6174
						1000	4.20	34.52	27.40	77.9	1.7840

STATION 8

13°00'N, 172°00'W January 30, 1950 Messenger time: 2226 GCT Weather: Scattered low cloud
Wind: 090°, 24 kt. Sea: 3-5 ft. Wire angle: 45° Depth of Observation: 110 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn. m.)
0	25.10	34.61	23.04	4.80	.30	0	25.10	34.61	23.04	483.8	.0000
75	24.94	34.90	23.30	4.80	.33	10	25.10	34.64	23.06	482.1	.0483
102	23.55	35.01	23.80	4.79	.46	20	25.10	34.67	23.08	480.5	.0964
135	21.07	35.03	24.52	4.46	1.12	30	25.09	34.70	23.10	478.3	.1444
199	14.90	34.47	25.61	3.82	2.34	50	25.06	34.79	23.18	471.7	.2394
263	10.65	34.40	26.39	1.81	2.51	75	24.94	34.90	23.30	461.4	.3561
327	9.16	34.40	26.64	1.11	2.90	100	23.80	35.01	23.73	421.5	.4667
453	7.48	34.47	26.95	.90	3.17	150	19.58	34.95	24.78	315.8	.6518
584	6.28	34.49	27.14	.97	3.18	200	14.90	34.47	25.61	244.7	.7926
727	5.48	34.49	27.24	1.06	3.18	250	11.20	34.41	26.30	178.7	.8990
1110	3.86	34.52	27.44	1.47	.40	300	9.63	34.40	26.56	153.9	.9826
						400	8.10	34.43	26.83	129.7	1.1253
						500	7.00	34.48	27.03	111.3	1.2466
						600	6.19	34.49	27.14	101.0	1.3534
						700	5.50	34.49	27.23	93.1	1.4512
						800	5.00	34.50	27.30	87.2	1.5421
						1000	4.21	34.52	27.40	78.1	1.7089

STATION 9

12°02'N, 172°04'W January 31, 1950 Messenger time: 1st cast: 0828 GCT 2nd cast: 0938 GCT (Bottom bottle did not trip on first cast) Weather: Scattered low cloud Wind: 100°, 24 kt. Sea: 5 - 8 ft. Wire angle: 1st cast: 46° 2nd cast: 52° Depth of observation: 1203 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.50	34.29	22.67	4.79	.46	0	25.50	34.29	22.67	518.4	.0000
74	25.06	34.81	23.20	4.84	.37	10	25.50	34.32	22.69	516.7	.0518
100	22.73	34.97	24.01	4.91	.45	20	25.42	34.37	22.74	511.0	.1031
133	19.00	34.87	24.94	4.29	.67	30	25.35	34.43	22.83	505.1	.1539
199	11.37	34.40	26.26	1.95	2.35	50	25.35	34.55	22.91	497.2	.2542
264	10.04	-----	-----	.83	2.87	75	25.08	34.81	23.19	472.1	.3754
330	9.30	34.60	26.78	.57	2.86	100	22.75	34.97	24.00	395.5	.4841
463	7.75	34.54	26.97	.63	3.10	150	16.00	34.75	25.57	246.5	.6453
597	6.50	34.51	27.12	.72	3.22	200	11.35	34.40	26.26	181.0	.7527
747	5.38	34.51	27.26	1.10	3.20	250	10.26	34.47	26.51	158.1	.8379
1203	3.57	34.58	27.52	1.46	----	300	9.61	34.55	26.68	142.7	.9135
						400	8.42	34.59	26.90	122.6	1.0470
						500	7.37	34.53	27.01	113.2	1.1656
						600	6.48	34.51	27.12	103.6	1.2748
						700	5.70	34.51	27.22	94.2	1.3744
						800	5.10	34.52	27.30	86.9	1.4657
						1000	4.20	34.55	27.42	75.7	1.6298

STATION 10

11°03'N, 172°00'W January 31, 1950 Messenger time: 2025 GCT Weather: Scattered low and middle cloud Wind: 100°, 20 kt. Sea: 3-5 ft. Wire angle: 30° Depth of observation: 1402 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.00	34.27	22.50	4.76	.38	0	26.00	34.27	22.50	534.7	.0000
93	19.82	34.81	24.68	4.70	.46	10	26.00	34.30	22.52	532.9	.0534
126	14.78	34.45	25.61	3.39	1.23	20	26.00	34.35	22.56	529.7	.1065
169	10.91	34.36	26.31	2.02	2.14	30	26.00	34.45	22.64	522.9	.1591
253	9.94	34.60	26.67	.50	2.82	50	25.91	34.71	22.84	502.2	.2616
339	8.80	34.65	26.90	.55	3.10	75	25.20	34.79	23.14	476.6	.3841
426	----	34.20	-----	4.87	----	100	17.90	34.80	25.16	284.3	.4794
600	6.17	34.52	27.18	.70	3.20	150	11.40	34.38	26.24	182.3	.5966
775	5.16	34.52	27.30	1.02	3.21	200	10.50	34.41	26.42	165.5	.6839
951	4.43	34.56	27.41	1.23	3.09	250	9.98	34.59	26.65	144.8	.7619
1402	3.20	34.60	27.57	1.57	3.00	300	9.32	34.65	26.81	130.5	.8311
						400	8.10	34.63	26.99	115.1	.9547
						500	7.09	34.57	27.08	106.3	1.0661
						600	6.23	34.52	27.16	99.3	1.1696
						700	5.56	34.51	27.24	92.4	1.2662
						800	5.02	34.53	27.32	85.1	1.3557
						1000	4.29	34.57	27.43	75.2	1.5174

STATION 11

10°02'N, 171°55'W February 1, 1950 Messenger time: 0602 GCT Weather: Scattered low cloud
Wind: 100°, 17 kt. Sea: 3 - 5 ft. Wire angle: 35° Depth of Observation: 1286 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	(°C)	(°/oo)	σ (mg/cm^3)	$10^5\delta$	Δ D (dyn.m.)
0	26.60	34.22	22.28	4.65	.35	0	26.60	34.22	22.27	556.3	.0000
9	26.56	34.20	22.28	4.65	.27	10	26.58	34.20	22.26	557.8	.0557
40	26.36	34.18	22.33	4.63	.27	20	26.55	34.20	22.27	557.0	.1114
79	22.42	34.90	24.04	5.00	.27	30	26.50	34.19	22.28	556.5	.1671
156	12.25	34.38	26.08	2.59	1.80	50	26.00	34.20	22.45	541.7	.2769
235	9.74	34.52	26.64	.74	2.78	75	22.95	34.90	24.79	414.9	.3966
315	8.96	34.60	26.83	.82	2.67	100	19.70	34.87	24.76	322.9	.4891
480	7.29	34.51	27.01	.85	2.94	150	12.88	34.39	25.96	208.8	.6225
651	6.06	34.49	27.16	.90	3.14	200	10.20	34.46	26.51	156.9	.7144
825	5.06	34.52	27.31	1.08	3.07	250	9.59	34.55	26.68	141.1	.7893
1286	3.36	34.58	27.54	1.82	3.00	300	9.11	34.60	26.80	131.0	.8577
						400	8.00	34.56	26.95	118.4	.9831
						500	7.10	34.50	27.03	111.5	1.0988
						600	6.39	34.49	27.11	104.0	1.2073
						700	5.75	34.50	27.21	95.5	1.3078
						800	5.20	34.51	27.28	89.1	1.4009
						1000	4.36	34.55	27.41	77.4	1.5689

STATION 12

9°00'N, 172°00'W February 1, 1950 Messenger time: 1600 GCT Weather: Scattered low cloud
Wind: 110°17 kt. Sea: 3 - 5 ft. Wire angle: 15° Depth of observation: 1426 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.30	34.31	22.12	4.65	.45	0	27.30	34.31	22.13	571.0	.0000
10	27.26	34.33	22.15	4.58	.38	10	27.30	34.33	22.14	569.9	.0570
48	27.15	34.45	22.28	4.63	.41	20	27.27	34.35	22.16	568.2	.1139
96	19.79	34.83	24.71	4.04	.71	30	27.23	34.38	22.20	564.9	.1706
190	10.95	34.63	26.52	.67	2.60	50	27.19	34.45	22.26	559.8	.2831
281	9.72	34.65	26.75	.75	2.83	75	23.35	34.77	23.67	425.4	.4063
373	9.04	34.63	26.84	.64	2.82	100	19.00	34.83	24.90	308.7	.4983
558	7.00	34.52	27.06	.65	----	150	13.70	34.68	26.02	203.7	.6269
745	5.59	34.51	27.24	.93	3.26	200	10.65	34.63	26.56	152.2	.7163
937	4.62	34.51	27.35	1.19	3.21	250	9.96	34.64	26.69	140.5	.7899
1426	3.14	34.56	27.54	1.87	3.07	300	9.60	34.65	26.76	135.1	.8592
						400	8.80	34.61	26.86	127.2	.9911
						500	7.61	34.53	26.98	116.7	1.1138
						600	6.61	34.52	27.11	104.5	1.2252
						700	5.90	34.52	27.21	96.2	1.3263
						800	5.29	34.51	27.27	90.2	1.4203
						1000	4.37	34.51	27.38	80.6	1.5926

STATION 13

8°00'N, 171°48'W February 2, 1950 Messenger time: 0401 GCT Weather: Overcast with rain squalls.
Wind: 140°, 15 kt. Sea: 3 - 5 ft. Wire angle: 20° Depth of Observation: 1379 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.42	34.42	22.17	4.75	.33	0	27.42	34.42	22.17	566.3	.0000
10	27.44	34.43	22.17	4.63	.27	10	27.42	34.43	22.18	566.1	.0566
47	27.42	34.43	22.17	4.62	.21	20	27.42	34.43	22.18	566.5	.1132
92	21.37	34.83	24.28	3.91	.50	30	27.42	34.43	22.18	567.0	.1699
181	11.05	34.79	26.62	.69	2.32	50	27.41	34.43	22.18	567.7	.2834
270	9.68	34.65	26.75	.68	2.54	75	25.60	34.77	23.00	490.1	.4157
358	8.93	34.65	26.87	1.11	2.40	100	19.20	34.83	24.86	313.4	.5164
536	7.60	34.60	27.04	.92	2.76	150	13.15	34.82	26.24	182.8	.6410
717	6.02	34.52	27.19	1.14	2.89	200	10.59	34.75	26.67	142.3	.7226
902	4.86	34.52	27.33	1.78	2.79	250	9.90	34.66	26.72	138.2	.7931
1379	3.27	34.58	27.54	1.78	2.89	300	9.41	34.65	26.80	132.0	.8610
						400	8.59	34.65	26.92	120.9	.9883
						500	7.88	34.62	27.01	114.2	1.1066
						600	7.00	34.57	27.10	106.2	1.2176
						700	6.19	34.52	27.12	100.0	1.3214
						800	5.48	34.52	27.26	91.8	1.4181
						1000	4.43	34.53	27.39	80.1	1.5916

STATION 14

7°00'N, 172°00'W February 3, 1950 Messenger time: 0336 GCT Weather: Scattered low cloud
Wind: 110°, 16 kt. Sea: 3 - 5 ft. Wire angle: 35° Depth of observation: 1339 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.92	34.51	22.07	4.67	.42	0	27.92	34.51	22.07	575.6	.0000
90	25.83	34.94	23.06	3.79	.67	10	27.91	34.55	22.11	573.1	.0574
122	20.82	34.85	24.45	4.03	.91	20	27.90	34.61	22.15	570.0	.1146
160	14.04	34.58	25.87	2.62	1.50	30	27.90	34.72	22.23	561.4	.1712
233	10.35	34.67	26.65	.72	2.53	50	27.89	34.84	22.33	553.2	.2826
308	9.42	34.65	26.79	1.03	2.45	75	26.90	34.92	22.71	517.9	.4166
539	7.49	34.58	27.04	1.06	2.90	100	25.00	34.94	23.31	461.2	.5393
701	6.06	34.52	27.19	.96	3.11	150	14.80	34.60	25.72	231.7	.7132
870	5.13	34.54	27.32	1.32	2.98	200	11.25	34.62	26.45	163.4	.8125
1339	3.42	34.56	27.51	1.87	3.04	250	10.06	34.67	26.70	140.0	.8887
						300	9.49	34.66	26.79	132.5	.9572
						400	8.69	34.62	26.89	124.7	1.0866
						500	7.82	34.59	27.00	115.4	1.2074
						600	6.89	34.55	27.10	106.1	1.3190
						700	6.10	34.52	27.18	98.9	1.4222
						800	5.47	34.53	27.26	91.0	1.5180
						1000	4.53	34.55	27.39	79.5	1.6900

STATION 15

6°07'N, 171°56'W February 3, 1950 Messenger time: 2312 GCT Weather: Scattered to broken low cloud Wind: 110° 15 kt. Sea: 1 - 3 ft. Wire angle: 0° Depth of Observation: 1470 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.80	34.78	22.32	4.71	.40	0	27.80	34.78	22.31	552.7	.0000
10	27.76	34.76	22.31	4.67	.32	10	27.79	34.76	22.30	554.4	.0554
50	27.71	34.78	22.35	4.66	.40	20	27.75	34.76	22.32	553.2	.1107
100	26.41	34.90	22.85	3.88	.50	30	27.72	34.76	22.33	552.4	.1660
199	13.68	34.56	25.93	2.17	1.72	50	27.70	34.78	22.35	551.5	.2764
296	9.85	34.65	26.72	1.00	2.58	75	27.70	34.87	22.42	546.0	.4137
393	8.90	34.65	26.88	1.02	2.40	100	27.55	34.90	22.48	540.3	.5498
588	7.04	34.54	27.07	.88	2.80	150	24.00	34.69	23.42	452.1	.7989
783	5.48	34.54	27.28	1.27	2.77	200	13.70	34.56	25.92	213.6	.9661
979	4.46	34.54	27.39	1.54	2.90	250	10.48	34.61	26.58	151.6	1.0579
1470	3.16	34.60	27.57	2.02	2.88	300	9.80	34.65	26.73	138.4	1.1308
						400	8.82	34.65	26.89	124.5	1.2631
						500	7.96	34.58	26.97	118.0	1.3851
						600	6.90	34.54	27.09	107.1	1.4984
						700	6.02	34.54	27.21	96.3	1.6009
						800	5.38	34.54	27.28	89.2	1.6944
						1000	4.35	34.54	27.40	78.3	1.8634

STATION 16

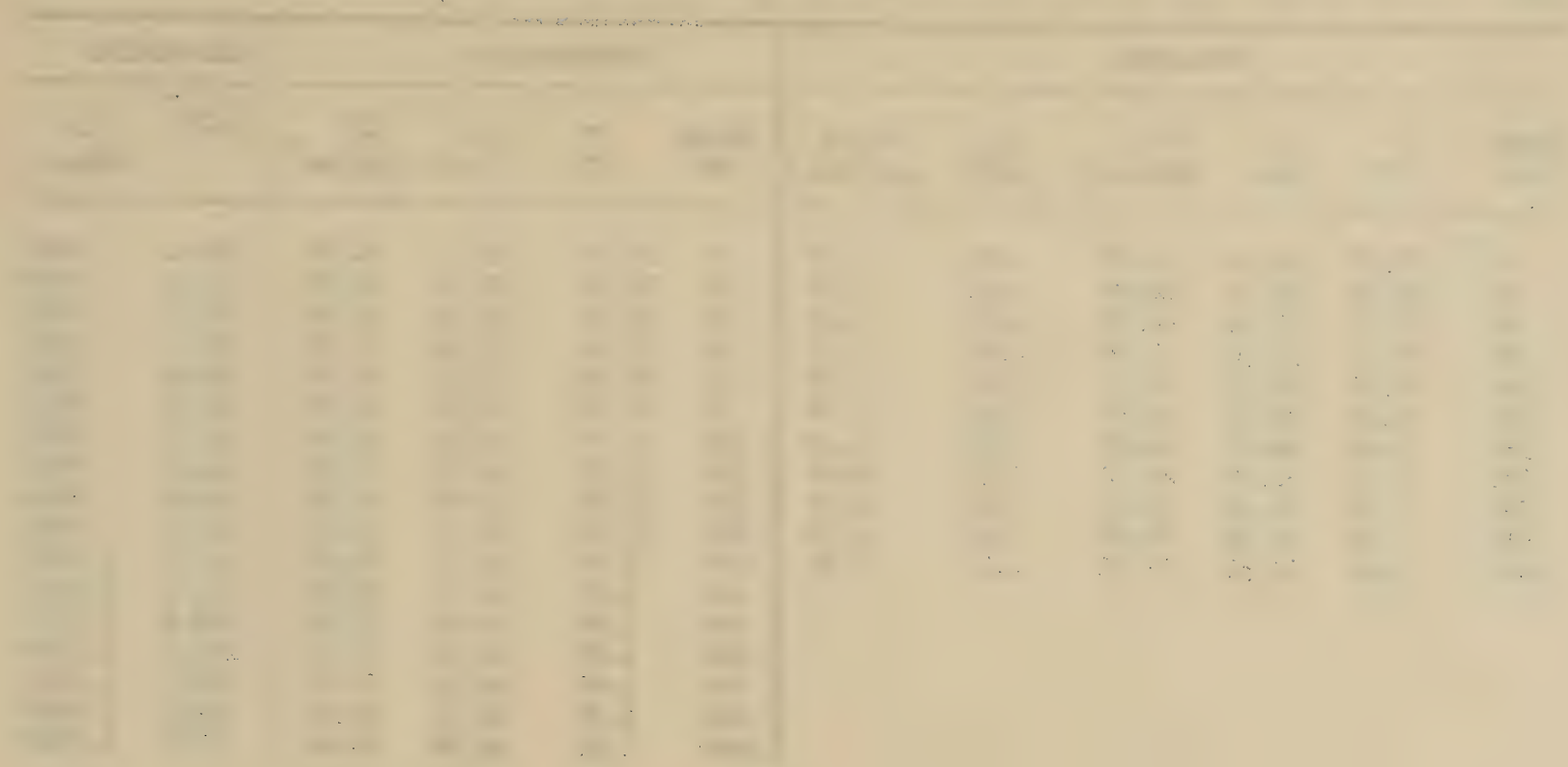
5°02'N, 172°01'W February 4, 1950 Messenger time: 1st cast: 0923 GCT 2nd cast: 1048 GCT (Bottom three bottles did not trip on first cast) Weather: Scattered low cloud Wind: 090°, 15 kt. Sea: 3 - 5 ft. Wire angle: Both casts: 10° Depth of observation: 1456 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.45	34.96	22.56	4.78	.48	0	27.45	34.96	22.57	528.8	.0000
10	27.39	34.94	22.57	4.73	.38	10	27.40	34.94	22.57	529.1	.0529
49	27.11	35.05	22.74	4.69	.50	20	27.32	34.95	22.60	526.1	.1057
98	25.90	35.12	23.17	3.87	.66	30	27.24	34.98	22.64	522.4	.1581
197	15.79	34.63	25.53	2.81	1.40	50	27.09	35.05	22.71	513.5	.2617
293	9.78	34.67	26.75	.96	2.50	75	26.60	35.10	22.94	495.9	.3880
388	8.79	34.63	26.88	.92	2.60	100	25.80	35.12	23.21	471.8	.5092
580	7.20	34.54	27.05	.83	2.91	150	22.50	34.90	24.02	395.5	.7269
772	5.32	34.52	27.28	1.35	3.06	200	15.15	34.63	25.67	238.4	.8861
967	4.43	34.52	27.38	1.82	3.14	250	10.32	34.67	26.66	144.3	.9823
1456	3.12	34.58	27.56	2.14	3.22	300	9.57	34.67	26.79	133.4	1.0521
						400	8.70	34.62	26.88	124.9	1.1820
						500	7.90	34.57	26.97	118.1	1.3043
						600	7.00	34.54	27.07	108.4	1.4184
						700	5.91	34.52	27.20	96.5	1.5216
						800	5.18	34.52	27.29	88.1	1.6147
						1000	4.30	34.52	27.39	79.2	1.7835

STATION 17

3°58'N, 172°00'W February 4, 1950 Messenger time: 1916 GCT Weather: Scattered low cloud
Wind: 100°, 14 kt. Sea: 3-5 ft. Wire angle: 5° Depth of Observation: 1459 m.

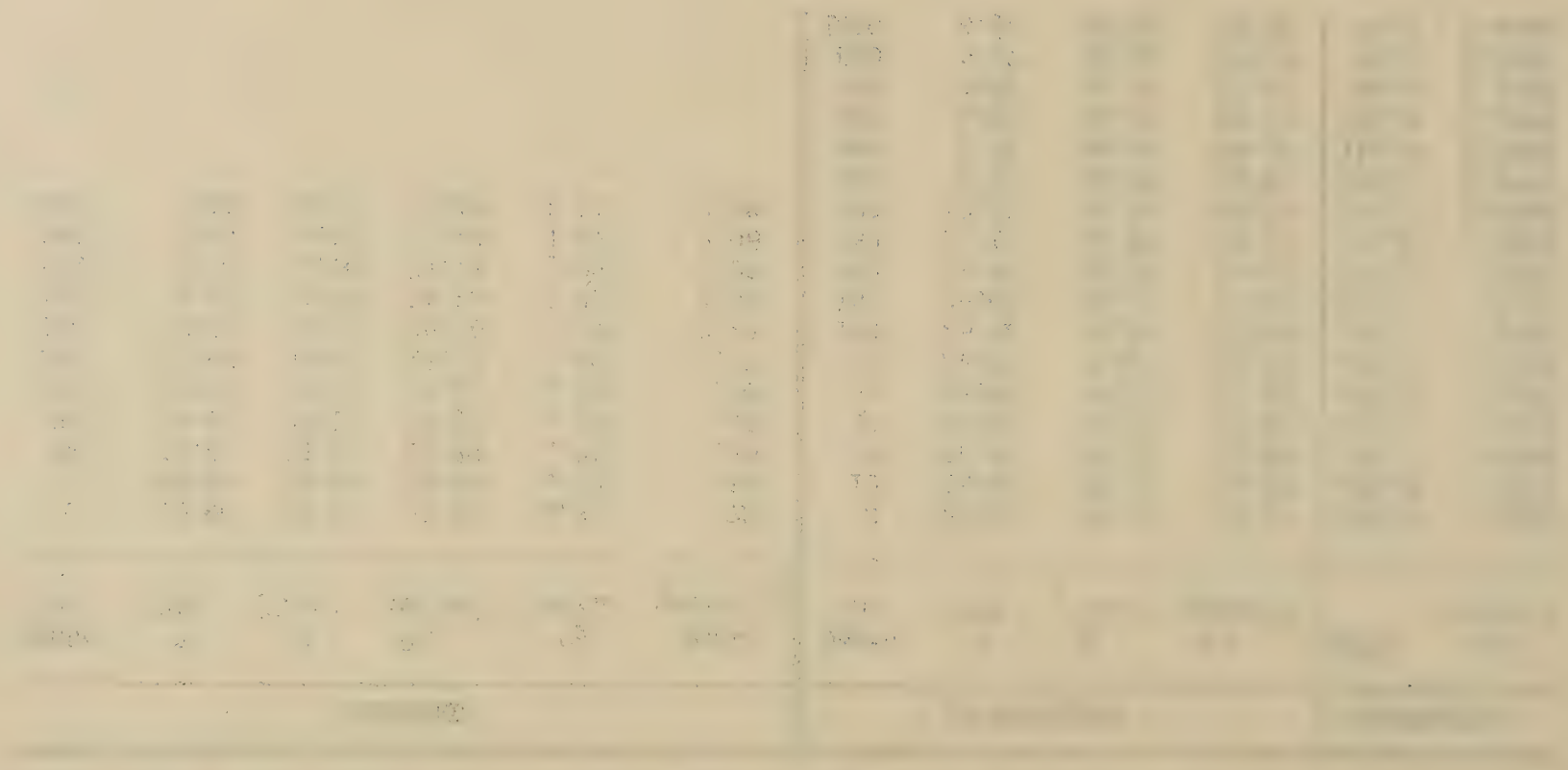
OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.20	35.14	22.78	4.67	.57	0	27.20	35.14	22.78	508.4	.0000
10	27.19	35.16	22.80	4.59	.38	10	27.20	35.16	22.80	507.3	.0508
48	27.20	35.14	22.78	4.63	.47	20	27.20	35.16	22.80	507.7	.1015
96	27.10	35.10	22.78	4.66	.42	30	27.20	35.16	22.80	508.1	.1523
193	13.84	34.60	25.93	2.24	1.70	50	27.19	35.14	22.78	510.0	.2541
290	9.26	34.63	26.81	1.85	2.38	75	27.15	35.12	22.78	511.3	.3819
386	8.44	34.67	26.97	1.86	2.43	100	27.10	35.10	22.85	512.1	.5101
580	7.04	34.60	27.12	1.17	2.88	150	23.80	34.72	23.51	444.5	.7502
774	5.52	34.54	27.27	1.59	2.93	200	13.10	34.60	26.08	199.0	.9119
968	4.54	34.56	27.40	1.87	2.93	250	10.10	34.61	26.65	145.2	.9984
1459	3.08	34.58	27.56	2.16	2.91	300	9.15	34.63	26.82	129.3	1.0674
						400	8.32	34.67	26.99	115.2	1.1904
						500	7.69	34.64	27.05	109.6	1.3035
						600	6.89	34.59	27.12	103.2	1.4107
						700	6.00	34.54	27.21	96.1	1.5111
						800	5.37	34.54	27.28	89.2	1.6045
						1000	4.41	34.56	27.41	77.7	1.7729



STATION 18

2°56'N, 172°04'W February 5, 1950 Messenger time: 0426 GCT Weather: Scattered low cloud
Wind: 100°, 19 kt. Sea: 3 - 5 ft. Wire angle: 40° Depth of observation: 1241 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.90	35.16	22.89	4.85	.72	0	26.90	35.16	22.89	497.6	.0000
7	26.90	35.16	22.89	4.70	.54	10	26.90	35.16	22.89	498.0	.0498
38	26.82	35.12	22.89	4.71	.56	20	26.85	35.13	22.88	499.1	.0996
77	26.80	35.17	22.93	4.59	.49	30	26.81	35.12	22.89	499.0	.1495
153	25.92	35.23	23.25	4.29	.70	50	26.80	35.13	22.88	498.8	.2493
228	11.93	34.67	26.37	2.48	1.87	75	26.80	35.17	22.93	497.0	.3739
304	10.07	34.74	26.76	1.67	2.23	100	26.72	35.20	22.98	493.3	.4980
461	8.62	34.67	26.94	1.81	2.50	150	26.00	35.23	23.22	471.7	.7402
624	6.64	34.60	27.18	1.22	3.00	200	13.80	34.72	26.03	204.3	.9100
794	5.47	34.54	27.28	1.67	2.96	250	11.12	34.69	26.52	156.8	1.0007
1241	3.10	34.56	27.49	2.11	2.98	300	10.11	34.74	26.75	137.0	1.0746
						400	9.17	34.70	26.87	126.5	1.2071
						500	8.19	34.65	26.99	116.6	1.3295
						600	6.90	34.61	27.14	101.9	1.4395
						700	6.09	34.57	27.22	95.0	1.5387
						800	5.47	34.54	27.27	90.3	1.6321
						1000	4.52	34.54	27.36	80.3	1.8042



STATION 19

2°00'N, 172°05'W February 5, 1950 Messenger time: 1240 GCT Weather: Scattered to broken low cloud Wind: 110°, 20 kt. Wire angle: 55° Depth of observation: 984 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.30	35.16	23.08	4.70	.57	0	26.30	35.16	23.08	479.8	.0000
61	25.30	35.23	23.44	4.58	.60	10	26.30	35.16	23.08	480.2	.0480
81	25.18	35.26	23.50	4.53	.67	20	26.30	35.17	23.08	480.0	.0960
105	25.20	35.23	23.47	4.46	.66	30	26.29	35.18	23.10	479.2	.1440
155	25.07	35.28	23.55	4.40	.74	50	25.55	35.21	23.35	455.9	.2375
206	11.92	34.70	26.39	2.85	1.50	75	25.20	35.26	23.50	442.8	.3499
258	11.19	34.83	26.63	2.49	1.64	100	25.18	35.23	23.48	445.3	.4611
366	9.98	34.88	26.88	1.62	2.12	150	25.18	35.27	23.51	444.7	.6846
479	8.78	34.63	26.88	1.45	2.33	200	12.10	34.70	26.35	172.7	.8397
606	7.10	34.56	27.08	1.55	2.62	250	11.30	34.81	26.59	151.5	.9211
984	4.44	34.52	27.38	2.00	2.81	300	10.70	34.87	26.66	137.6	.9938
						400	9.65	34.84	26.90	123.8	1.1253
						500	8.50	34.62	26.91	123.7	1.2499
						600	7.19	34.56	27.04	109.7	1.3674
						700	6.25	34.54	27.18	99.4	1.4727
						800	5.50	34.52	27.25	92.1	1.5693
						1000*	4.32	34.52	27.39	79.5	1.7424

*Extrapolated values at this depth.

STATION 20

1°01'N, 172°09'W February 6, 1950 Messenger time: 0135 GCT Weather: Scattered low cloud Wind: 140°, 15 kt. Sea: 1-3 ft. Wire angle: 1st cast: 60° 2nd cast: 10°* (Bottom three bottles did not trip on first cast) Depth of Observation: 1657 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO-$_4$P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.00	35.23	23.53	4.78	.80	0	25.00	35.23	23.53	436.3	.0000
56	24.75	35.21	23.59	4.64	.72	10	24.86	35.23	23.58	432.2	.0434
73	24.72	35.19	23.59	----	.80	20	24.76	35.23	23.61	429.8	.0865
93	24.72	35.21	23.60	4.55	.72	30	24.70	35.23	23.62	428.7	.1294
125	24.72	35.17	23.57	4.78	.78	50	24.70	35.21	23.61	431.0	.2154
155	24.44	35.19	23.67	4.44	.82	75	24.70	35.19	23.55	433.3	.3235
185	17.40	34.76	25.25	3.19	1.06	100	24.70	35.20	23.60	433.6	.4322
---	-----	-----	-----	----	----	150	24.61	35.20	23.63	432.9	.6496
1065	4.22	34.52	27.40	2.10	2.94	200	14.50	34.75	25.90	216.0	.8126
1262	3.62	34.56	27.50	2.16	2.83	250**	10.95	34.80	26.63	145.8	.9036
1657	2.76	34.58	27.59	2.45	2.88	300**	10.42	34.88	26.80	131.8	.9734
						400**	9.71	34.75	26.82	131.5	1.1058
						500**	8.46	34.61	26.91	123.6	1.2342
						600**	7.19	34.56	27.03	109.7	1.3517
						700**	6.21	34.53	27.18	99.6	1.4571
						800**	5.50	34.52	27.25	92.1	1.5537
						1000	4.46	34.52	27.38	81.0	1.7284

* During second cast vessel under power "upstream" to reduce wire angle.

** All values at these depths interpolated between stations 19 and 21.

STATION 21

0°00', 171°59'W February 6, 1950 Messenger time: 1307 GCT Weather: Scattered low cloud
Wind: 100°, 17 kt. Sea: 1 - 3 ft. Wire angle: 5°* Depth of observation: 1652 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	24.98	35.32	23.61	4.79	.82	0	24.98	35.32	23.60	429.6	.0000
10	25.04	35.34	23.60	4.66	.72	10	24.98	35.34	23.62	428.2	.0429
48	24.92	35.34	23.64	4.58	.75	20	24.98	35.34	23.62	428.7	.0857
96	24.84	35.34	23.67	4.51	.74	30	24.95	35.34	23.63	427.9	.1286
192	18.78	35.39	25.39	3.16	1.08	50	24.90	35.34	23.64	427.4	.2141
288	11.91	34.87	26.52	2.83	1.73	75	24.90	35.34	23.64	428.4	.3212
384	10.79	34.78	26.66	2.13	1.90	100	24.85	35.34	23.66	427.8	.4284
576	7.50	34.58	27.04	1.53	2.51	150	24.40	35.38	23.83	414.0	.6397
771	5.73	34.52	27.23	1.92	2.57	200	17.95	35.38	25.57	246.8	.8057
967	4.60	34.52	27.36	2.22	2.61	250	13.85	35.26	26.44	167.0	.9097
1652	2.83	34.60	27.60	2.47	2.72	300	11.73	34.85	26.54	157.3	.9912
						400	10.51	34.76	26.69	144.5	1.1430
						500	8.62	34.65	26.92	123.2	1.2778
						600	7.26	34.56	27.05	110.7	1.3955
						700	6.32	34.53	27.16	101.2	1.5023
						800	5.49	34.52	27.25	91.9	1.5996
						1000	4.39	34.52	27.38	80.2	1.7733

*Vessel under power "upstream" to reduce wire angle.

STATION 22 (Corrected)*

1°01'S, 172°00'W February 6, 1950 Messenger time: 2249 GCT Weather: Broken low cloud
Wind: 080°, 18 kt. Sea: 3-5 ft. Wire angle: 26°** Depth of Observation: 1467 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	-----	35.52	23.76	4.82	---	0	26.36	35.52	23.33	455.7	.0000
98	24.94	35.37	23.66	4.39	.68	10	26.30	35.50	23.34	455.8	.0456
133	24.77	35.48	23.79	4.25	---	20	26.24	35.48	23.34	455.8	.0912
177	23.40	35.84	24.47	3.52	.89	30	26.17	35.46	23.35	455.5	.1367
265	11.90	34.90	26.55	2.88	1.60	50	25.84	35.43	23.43	448.7	.2271
354	10.76	34.79	26.68	1.85	1.95	75	25.22	35.39	23.59	434.4	.3376
443	10.18	34.74	26.74	1.67	2.07	100	24.94	35.37	23.66	428.6	.4458
623	6.91	34.58	27.12	1.67	2.07	150	24.59	35.69	24.01	397.2	.6530
989	4.29	34.56	27.45	2.12	2.70	200	19.12	35.79	25.61	245.5	.8145
1563	3.08	34.56	27.55	2.33	2.70	250	12.50	34.95	26.47	163.4	.9172
						300	11.27	34.84	26.62	148.0	.9955
						400	10.49	34.76	26.70	144.1	1.1425
						500	9.41	34.69	26.83	133.0	1.2819
						600	7.31	34.59	27.07	109.4	1.4040
						700	6.03	34.56	27.22	94.9	1.5069
						800	5.28	34.56	27.32	86.3	1.5982
						1000	4.21	34.56	27.44	75.0	1.7610

* Station 22 was originally incorrectly analyzed. The incorrect values were utilized in drawing all cross-sections of this report. No basic features of the cross sections as drawn are eliminated by this correction. The values tabulated above are the correct values.

** Vessel under power "upstream" to reduce wire angle.

STATION 23

2°00'S, 172°02'W February 7, 1950 Messenger time: 0925 GCT Weather: Scattered low cloud
Wind: 080°, 15 kt. Sea: 1 - 3 ft. Wire angle: 6°* Depth of observation: 975 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.30	35.68	23.16	4.67	.70	0	27.30	35.68	23.15	472.7	.0000
10	27.24	35.66	23.16	4.63	.63	10	27.23	35.66	23.16	472.4	.0473
50	26.84	35.62	23.26	4.53	.67	20	27.13	35.65	23.18	470.4	.0944
100	25.93	35.52	23.47	4.56	.74	30	27.05	35.64	23.20	469.0	.1414
206	23.32	35.59	24.31	3.85	1.07	50	26.82	35.62	23.26	464.3	.2347
302	10.81	34.81	26.68	2.00	2.32	75	26.47	35.56	23.32	459.2	.3502
398	9.99	34.72	26.75	1.59	2.45	100	26.05	35.52	23.43	450.3	.4642
590	7.86	34.61	27.01	2.08	2.67	150	25.49	35.56	23.63	432.7	.6858
783	5.39	34.52	27.27	2.17	2.87	200	24.10	35.59	24.08	392.3	.8931
975	4.37	34.52	27.39	2.25	2.98	250	15.65	35.20	26.00	209.3	1.0442
---	----	34.67	-----	1.90	2.46	300	10.81	34.81	26.68	143.8	1.1330
						400	9.99	34.72	26.75	138.3	1.2749
						500	8.95	34.67	26.88	126.9	1.4084
						600	7.69	34.61	27.03	113.3	1.5293
						700	6.31	34.55	27.18	99.5	1.6365
						800	5.26	34.52	27.28	89.1	1.7316
						1000	4.30	34.52	27.39	79.2	1.9014

* Vessel under power "upstream" to reduce wire angle.

STATION 24

3°00'S, 172°04'W February 7, 1950 Messenger time: 1812 GCT Weather: Scattered to broken low cloud Wind: 080°, 14 kt. Sea: 1 - 3 ft. Wire angle: 51° Depth of Observation: 1257 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.80	35.62	22.95	4.72	.72	0	27.80	35.62	22.94	492.6	.0000
71	26.47	35.57	23.33	4.73	.66	10	27.65	35.61	22.99	488.8	.0491
153	25.25	35.39	23.57	4.58	---	20	27.46	35.61	23.05	483.3	.0977
182	24.08	35.21	23.79	3.84	.91	30	27.30	35.60	23.09	479.5	.1458
241	15.63	35.62	26.33	2.31	1.67	50	26.89	35.59	23.22	468.8	.2406
306	10.55	34.79	26.71	2.57	1.94	75	26.40	35.57	23.36	456.3	.3564
372	9.52	34.72	26.83	2.53	2.04	100	26.05	35.53	23.44	449.6	.4699
511	8.38	34.69	26.99	2.01	2.43	150	25.30	35.40	23.57	438.6	.6928
661	6.72	34.58	27.15	1.77	2.48	200	23.61	35.24	23.96	403.5	.9044
818	5.54	34.51	27.24	2.04	2.89	250	14.85	35.62	26.50	161.5	1.0463
1257	3.62	34.56	27.50	2.46	2.86	300	10.90	34.81	26.66	145.5	1.1235
						400	9.26	34.72	26.87	126.5	1.2603
						500	8.50	34.70	26.98	117.8	1.3833
						600	7.40	34.62	27.08	108.6	1.4973
						700	6.39	34.56	27.18	100.0	1.6024
						800	5.62	34.52	27.24	93.7	1.7000
						1000	4.51	34.53	27.30	80.9	1.8762

STATION 25

4°00'S, 171°58'W February 8, 1950 Messenger time: 0302 GCT Weather: Scattered low cloud
Wind: 060°, 19 kt. Sea: 3 - 5 ft. Wire angle: 25° Depth of observation: 1332 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	27.91	35.70	22.97	4.58	.62	0	27.91	35.70	22.97	489.9	.0000
9	27.94	35.71	22.97	4.58	.52	10	27.91	35.71	22.98	489.8	.0490
43	27.72	35.68	23.02	4.55	.60	20	27.88	35.70	22.98	490.2	.0980
86	27.30	35.68	23.16	4.32	.68	30	27.80	35.69	22.99	488.8	.1469
172	24.90	36.09	24.22	3.60	.89	50	27.69	35.68	23.03	486.8	.2445
258	13.17	35.01	26.39	2.23	1.98	75	27.49	35.68	23.09	481.6	.3656
344	10.44	34.78	26.72	2.20	2.18	100	27.19	35.70	23.20	472.0	.4851
518	7.94	34.58	26.98	1.32	2.83	150	26.15	36.01	23.76	420.7	.7092
693	6.24	34.56	27.20	1.97	2.77	200	23.33	36.08	24.67	335.4	.8991
871	4.89	34.54	27.35	2.52	2.88	250	14.25	35.10	26.23	186.9	1.0304
1332	3.51	34.58	27.52	2.63	2.98	300	11.56	34.87	26.59	152.9	1.1158
						400	9.47	34.69	26.82	131.9	1.2591
						500	8.12	34.60	26.90	119.3	1.3855
						600	7.09	34.56	27.08	108.5	1.5002
						700	6.12	34.56	27.21	96.3	1.6034
						800	5.30	34.55	27.30	87.4	1.6960
						1000	4.29	34.55	27.41	76.7	1.8616

STATION 26

5°02'S, 171°53'W February 8, 1950 Messenger time: 1238 GCT Weather: Scattered low cloud
Wind: 070°, 20 kt. Sea: 5 - 8 ft. Wire angle: 40° Depth of observation: 1085 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5 \delta$	ΔD (dyn.m.)
0	27.80	35.79	23.07	4.64	.57	0	27.80	35.79	23.07	480.3	.0000
8	27.84	35.77	23.04	4.55	.49	10	27.80	35.77	23.06	482.2	.0481
38	27.84	35.68	22.98	4.58	.54	20	27.80	35.70	23.00	487.7	.0966
73	27.62	35.71	23.07	4.42	.62	30	27.82	35.68	22.98	490.1	.1455
138	26.87	35.81	23.39	3.89	.80	50	27.80	35.69	22.99	489.6	.2435
198	23.52	36.08	24.62	3.49	.91	75	27.61	35.71	23.08	483.1	.3652
256	15.48	35.25	26.07	2.41	1.68	100	27.45	35.74	23.15	477.1	.4855
383	9.72	34.72	26.80	2.27	2.23	150	26.30	35.85	23.60	436.3	.7147
516	8.16	34.65	26.99	2.41	2.13	200	23.40	36.08	24.65	337.4	.9091
662	6.70	34.61	27.17	1.67	2.74	250	16.40	35.82	26.30	180.9	1.0393
1085	4.22	34.54	27.42	2.38	2.90	300	11.62	34.91	26.61	151.0	1.1228
						400	9.45	34.70	26.83	130.9	1.2646
						500	8.30	34.65	26.97	118.2	1.3899
						600	7.35	34.63	27.09	107.2	1.5034
						700	6.31	34.61	27.22	95.2	1.6054
						800	5.55	34.59	27.30	87.7	1.6976
						1000	4.53	34.55	27.39	79.7	1.8665

STATION 30*

4°55'S, 158°13'W February 18, 1950 Messenger time: 1602 GCT Weather: Scattered low cloud
Wind: 070°, 14 kt. Sea: 1 - 3 ft. Wind angle: 32° Depth of observation: 1207 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/l)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.60	35.75	23.43	4.77	.72	0	26.60	35.75	23.43	446.3	.0000
8	26.62	35.73	23.41	4.70	.60	10	26.60	35.73	23.42	448.1	.0447
40	26.62	35.70	23.38	4.69	.59	20	26.60	35.72	23.41	449.2	.0896
80	25.78	35.43	23.45	4.81	.66	30	26.58	35.71	23.41	449.9	.1345
159	23.88	34.63	23.42	3.81	.88	50	26.58	35.68	23.38	452.8	.2248
238	12.98	34.78	26.24	2.00	1.92	75	26.39	35.43	23.26	466.0	.3398
316	10.09	34.96	26.92	1.98	2.07	100	25.19	35.49	23.67	427.0	.4516
473	8.21	34.63	26.97	2.06	2.42	150	24.20	35.93	24.30	368.9	.6514
630	6.92	34.54	27.09	2.08	2.63	200	20.15	35.23	24.92	311.5	.8223
790	5.62	34.54	27.26	1.98	2.77	250	12.05	34.92	26.46	156.9	.9400
1207	3.72	34.61	27.53	2.51	2.70	300	10.30	34.81	26.77	135.2	1.0135
						400	8.99	34.69	26.90	124.1	1.1439
						500	7.99	34.51	26.99	116.2	1.2648
						600	7.12	34.54	27.06	110.4	1.3789
						700	6.29	34.54	27.17	99.9	1.4849
						800	5.55	34.54	27.27	91.3	1.5813
						1000	4.49	34.57	27.41	77.9	1.7520

* Stations 27, 28, and 29 were not hydrographic stations.

STATION 31*

3°53'S, 157°47'W February 19, 1950 Messenger time: 0223 GCT Weather: Scattered low cloud
Wind: 070°, 16 kt. Sea: 1-3 ft. Wire angle: 42° Depth of observation: 1216 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.90	35.52	23.48	4.85	.76	0	25.90	35.52	23.48	441.9	.0000
						10	25.90	35.52	23.48	442.3	.0442
						20	25.90	35.53	23.48	442.0	.0884
						30	25.90	35.53	23.48	442.4	.1326
						50	25.80	35.53	23.52	440.2	.2209
						75	25.60	35.52	23.57	436.0	.3305
						100	25.50	35.50	23.59	435.3	.4397
						150	24.75	35.40	23.74	422.6	.6550
						200	16.95	35.32	25.79	227.8	.8184
						250	11.95	34.96	26.59	152.0	.9138
						300	9.70	34.83	26.89	123.3	.9830
						400	8.90	34.70	26.92	122.1	1.1065
						500	7.84	34.63	27.03	112.8	1.2247
						600	6.98	34.59	27.12	95.7	1.3340
						700	6.17	34.56	27.22	95.7	1.4348
						800	5.39	34.54	27.28	89.4	1.5281
						1000	4.40	34.54	27.40	79.0	1.6980

*Bad cast. Only the surface observations are reliable. The interpolated values tabulated above were obtained by interpolation between stations 30 and 32, modified in some respects by information from the cast at station 31, and their accuracy is questionable.

STATION 32

3°06'S, 158°21'W February 19, 1950 Messenger time: 1223 GCT Weather: Scattered low cloud
Wind: 070°, 18 kt. Sea: 1 - 3 ft. Wire angle: 56° Depth of observation: 886 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.67	35.48	23.52	4.82	.77	0	25.67	35.48	23.52	438.1	.0000
6	25.65	35.48	23.52	4.75	.61	10	25.67	35.48	23.52	438.5	.0438
30	25.63	-----	-----	----	---	20	25.65	35.48	23.51	438.1	.0877
57	25.63	35.46	23.51	4.75	.72	30	25.62	35.48	23.53	437.6	.1314
101	25.45	35.39	23.52	4.75	.67	50	25.60	35.47	23.53	438.7	.2191
137	24.84	35.46	23.76	4.51	.92	75	25.55	35.44	23.53	440.2	.3290
180	11.24	35.30	26.98	2.45	1.43	100	25.49	35.39	23.51	443.0	.4397
268	11.08	34.85	26.66	2.09	2.02	150	24.60	35.45	23.82	414.9	.6550
362	9.26	-----	-----	1.87	2.28	200	15.00	35.19	26.14	194.4	.8081
573	6.99	34.58	27.11	1.34	2.83	250	11.60	34.94	26.64	147.3	.8939
886	4.68	34.54	27.37	2.19	2.82	300	10.22	34.75	26.74	138.1	.9657
						400	8.79	34.65	26.90	124.0	1.0975
						500	7.69	34.60	27.02	112.7	1.2167
						600	6.76	34.57	27.13	102.9	1.3252
						700	5.93	34.55	27.23	94.3	1.4246
						800	5.22	34.54	27.30	87.2	1.5160
						1000	4.10	34.55	27.44	74.4	1.6791

STATION 33

2°03'S, 158°28'W February 19, 1950 Messenger time: 2300 GCT Weather: Scattered low cloud
Wind: 090°, 18 kt. Sea: 3-5 ft. Wire angle: 10°* Depth of Observation: 1352 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.20	35.37	23.58	4.75	.80	0	25.20	35.37	23.58	431.8	.0000
10	25.14	35.37	23.60	4.74	.68	10	25.11	35.37	23.61	429.6	.0430
50	24.68	35.37	23.74	----	---	20	25.00	35.37	23.64	427.0	.0859
98	24.36	35.23	23.73	4.78	.78	30	24.85	35.37	23.69	422.9	.1284
190	15.43	35.21	26.05	2.04	1.67	50	24.40	35.37	23.82	410.9	.2118
280	10.94	34.81	26.66	2.45	1.96	75	24.16	35.29	23.84	410.6	.3146
371	9.41	34.70	26.84	1.93	2.32	100	24.35	35.23	23.73	421.5	.4188
553	9.14	34.67	26.86	1.72	2.35	150	24.15	35.23	23.79	417.6	.6294
519	8.18	34.61	26.96	1.46	2.64	200	14.50	35.20	26.25	183.3	.7805
786	5.49	34.52	27.26	2.16	2.78	250	11.81	34.96	26.61	149.7	.8640
1352	3.36	34.58	27.54	2.57	2.72	300	10.50	34.77	26.70	141.4	.9372
						400	9.20	34.68	26.85	128.4	1.0729
						500	8.40	34.62	26.93	122.0	1.1990
						600	7.19	34.57	27.07	109.1	1.3153
						700	6.12	34.54	27.19	97.7	1.4195
						800	5.40	34.52	27.27	90.9	1.5146
						1000	4.32	34.53	27.40	78.7	1.6857

* Vessel under power "upstream" to reduce wire angle.

STATION 34

1°07'S, 158°28'W February 20, 1950 Messenger time: 0915 GCT Weather: Scattered low cloud
Wind: 080°, 15 kt. Sea: 3 - 5 ft. Wire angle: 47° Depth of observation: 1295 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	Δ D (dyn.m.)
0	24.42	35.41	23.84	4.69	1.02	0	24.42	35.41	23.85	406.6	.0000
6	24.42	35.35	23.80	4.64	.68	10	24.45	35.35	23.79	412.2	.0409
30	24.41	35.35	23.80	4.67	.70	20	24.45	35.35	23.80	412.4	.0822
61	24.36	35.37	23.83	4.61	.67	30	24.45	35.35	23.79	412.9	.1234
123	23.57	35.79	24.38	4.05	.75	50	24.41	35.36	23.81	411.9	.2059
184	15.42	35.26	26.10	2.72	1.35	75	24.32	35.42	23.89	405.8	.3082
247	11.69	34.87	26.56	2.71	1.70	100	24.20	35.57	24.03	392.7	.4082
381	9.94	34.76	26.79	2.34	2.13	150	18.75	35.65	25.60	244.7	.5682
526	7.54	34.61	27.05	1.75	2.55	200	14.44	35.13	26.21	187.1	.6767
848	5.02	34.52	27.32	2.09	2.88	250	11.60	34.86	26.57	153.2	.7622
1295	3.45	34.58	27.53	2.10	2.85	300	10.80	34.80	26.67	144.5	.8371
						400	9.60	34.75	26.84	129.9	.9751
						500	7.91	34.64	27.02	113.1	1.0974
						600	6.79	34.57	27.13	103.4	1.2064
						700	5.92	34.54	27.22	94.9	1.3063
						800	5.29	34.52	27.28	89.5	1.3993
						1000	4.30	34.53	27.40	78.5	1.5688

STATION 35

0°04'S, 158°22'W February 20, 1950 Messenger time: 1924 GCT Weather: Scattered low cloud
Wind: 090°, 17 kt. Sea: 3 - 5 ft. Wire angle: 18°* Depth of observation: 1589 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	23.85	35.10	23.78	4.75	.87	0	23.85	35.10	23.78	412.7	.0000
9	23.84	35.07	23.76	4.73	.70	10	23.85	35.07	23.76	415.3	.0414
46	23.76	35.10	23.81	4.66	---	20	23.82	35.08	23.78	413.9	.0829
93	23.46	35.10	23.90	4.48	.75	30	23.80	35.09	23.79	413.2	.1242
185	14.99	35.17	26.12	3.30	1.23	50	23.75	35.10	23.81	411.8	.2067
276	11.33	34.85	26.62	2.04	2.02	75	23.60	35.10	23.86	408.6	.3094
368	10.02	34.76	26.78	1.67	2.20	100	23.45	35.11	23.91	404.7	.4113
553	7.06	34.56	27.09	1.41	2.79	150	22.50	35.16	24.22	376.8	.6074
738	5.66	34.54	27.25	2.08	2.74	200	13.67	35.15	26.39	170.1	.7448
1112	3.96	34.56	27.46	2.24	2.82	250	11.85	34.90	26.56	154.8	.8264
1589	2.91	34.60	27.59	2.37	2.84	300	10.91	34.83	26.68	144.4	.9017
						400	9.60	34.71	26.81	132.8	1.0411
						500	7.88	34.58	26.98	116.9	1.1668
						600	6.52	34.55	27.15	101.3	1.2766
						700	5.89	34.54	27.22	94.5	1.3753
						800	5.27	34.54	27.30	87.7	1.4671
						1000	4.32	34.55	27.41	77.2	1.6335

* Vessel under power "upstream" to reduce wire angle.

STATION 36

1°02'N, 158°05'W February 21, 1950 Messenger time: 0845 GCT Weather: Clear to scattered low cloud Wind: 080°, 14 kt. Sea: 1 - 3 ft. Wire angle: 36°* Depth of observation: 1184 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	24.70	35.05	23.49	4.83	.73	0	24.70	35.05	23.50	440.5	.0000
7	24.70	35.05	23.49	4.83	.66	10	24.70	35.05	23.50	440.9	.0441
34	24.50	34.83	23.38	4.79	.70	20	24.63	35.00	23.47	442.7	.0882
67	24.22	34.85	23.48	4.76	.70	30	24.59	34.83	23.35	454.6	.1331
135	21.44	34.99	24.38	3.80	1.04	50	24.40	34.84	23.42	449.2	.2234
210	12.12	35.07	26.64	2.81	1.74	75	24.20	34.86	23.50	442.8	.3351
286	11.46	35.07	26.76	2.10	2.00	100	24.09	34.92	23.57	436.6	.4453
441	8.99	34.70	26.90	1.25	2.54	150	18.15	35.01	25.26	276.7	.6243
600	6.76	34.58	27.14	1.54	2.79	200	12.30	35.06	26.60	150.1	.7315
761	5.72	34.56	27.26	1.94	2.75	250	11.72	35.08	26.72	139.0	.8042
1184	3.69	34.60	27.52	2.08	2.87	300	11.27	35.06	26.79	133.7	.8727
						400	9.65	34.77	26.85	129.0	1.0049
						500	8.07	34.63	26.99	116.3	1.1283
						600	6.77	34.58	27.14	102.5	1.2385
						700	6.05	34.56	27.22	95.4	1.3382
						800	5.50	34.56	27.28	89.3	1.4313
						1000	4.51	34.57	27.41	78.0	1.6001

* Vessel under power "upstream" to reduce wire angle.

STATION 37

2°03'N, 158°08'W February 21, 1950 Messenger time: 2330 GCT Weather: Scattered to broken low cloud Wind: 120°, 17 kt. Sea: 3 - 5 ft. Wire angle: 65° Depth of observation: 1617 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	24.68	35.05	23.50	4.87	.75	0	24.68	35.05	23.49	440.1	.0000
10	24.68	35.01	23.47	4.74	.67	10	24.68	35.01	23.46	443.4	.0442
48	24.59	34.92	23.43	4.70	.66	20	24.68	34.98	23.44	445.9	.0886
86	24.36	35.01	23.56	4.70	.70	30	24.66	34.96	23.43	447.0	.1333
138	23.68	35.01	23.76	4.16	.85	50	24.58	34.92	23.42	448.6	.2228
196	11.43	34.76	26.53	2.64	1.75	75	24.45	34.99	23.52	440.7	.3341
253	10.86	34.79	26.66	2.04	2.00	100	24.00	35.02	23.67	426.5	.4428
364	11.40	34.74	26.52	2.48	----	150	23.40	35.00	23.83	413.1	.6535
475	8.30	34.69	27.00	1.33	2.53	200	11.33	34.76	26.54	154.4	.7960
744	5.62	34.58	27.29	1.58	2.80	250	10.89	34.79	26.65	145.7	.8715
1617	2.88	34.60	27.60	2.24	2.83	300	10.38	34.77	26.72	139.3	.9431
						400	9.25	34.73	26.89	125.6	1.0764
						500	7.95	34.67	27.04	111.3	1.1956
						600	6.78	34.62	27.10	99.6	1.3018
						700	5.78	34.58	27.27	90.0	1.3973
						800	5.10	34.57	27.34	83.3	1.4847
						1000	4.18	34.57	27.44	73.9	1.6433

STATION 38

3°02'N, 157°51'W February 23, 1950 Messenger time: 0410 GCT Weather: Scattered high cloud (Cirrostratus) Wind: 090°, 15 kt. Sea: 3-5 ft. Wire angle: 62° Depth of Observation: 1677 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3	$10^5\delta$	ΔD (dyn.m.)
0	25.00	35.05	23.40	4.96	.78	0	25.00	35.05	23.39	449.4	.0000
10	25.00	35.07	23.41	4.86	.76	10	25.00	35.07	23.41	448.2	.0449
88	24.58	34.97	23.47	4.83	.73	20	25.00	35.07	23.41	448.6	.0897
170	16.83	34.78	25.40	2.64	1.42	30	24.70	35.07	23.51	440.2	.1342
348	9.41	34.72	26.85	1.89	2.42	50	24.67	35.06	23.51	441.0	.2223
541	7.16	34.74	27.21	1.78	2.38	75	24.60	35.01	23.44	443.6	.3329
965	4.34	34.58	27.44	2.01	2.82	100	24.57	34.92	23.43	450.1	.4449
1286	3.46	34.58	27.53	2.07	2.97	150	24.40	34.80	23.38	455.8	.6723
1677	2.62	34.61	27.63	2.25	2.98	200	10.50	34.76	26.69	139.9	.8219
						250	9.95	34.74	26.78	132.9	.8905
						300	9.80	34.73	26.79	132.5	.9572
						400	8.79	34.72	26.95	118.7	1.0836
						500	7.68	34.74	27.13	102.2	1.1947
						600	6.70	34.69	27.23	93.3	1.2932
						700	5.83	34.58	27.26	90.7	1.3859
						800	5.12	34.58	27.35	82.9	1.4734
						1000	4.22	34.58	27.44	73.8	1.6315

STATION 39

4°03'N, 157°53'W February 23, 1950 Messenger time: 1st cast: 1335 GCT 2nd cast: 1430 GCT (Lowest two bottles pretripped) Weather: Scattered low and middle cloud Wind: 100°, 19 kt. Sea: 3 - 5 ft. Wire angle: 1st cast: 30° 2nd cast: 31° Depth of observation: 1538 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.60	35.16	23.30	4.81	.63	0	25.60	35.16	23.30	459.0	.0000
9	25.58	35.12	23.27	4.75	.54	10	25.60	35.12	23.27	462.2	.0461
43	25.60	35.07	23.23	4.70	---	20	25.60	35.09	23.24	464.9	.0924
84	25.34	35.10	23.33	4.55	.62	30	25.60	35.07	23.23	466.7	.1390
167	20.95	34.96	24.50	3.36	1.03	50	25.57	35.07	23.24	466.5	.2323
250	9.88	34.63	26.70	1.92	2.11	75	25.41	35.09	23.31	461.2	.3484
334	9.03	34.67	26.87	2.05	2.18	100	25.19	35.10	23.38	455.0	.4632
504	7.80	34.63	27.03	.83	2.88	150	24.06	35.06	23.69	427.3	.6846
677	6.24	34.56	27.20	1.28	2.89	200	12.40	34.69	26.29	178.9	.8369
1048	4.24	34.58	27.47	1.43	3.10	250	9.88	34.63	26.70	140.1	.9171
1538	2.73	34.61	27.62	2.22	3.02	300	9.28	34.65	26.82	129.9	.9850
						400	8.59	34.67	26.94	119.4	1.1104
						500	7.82	34.63	27.03	112.4	1.2270
						600	6.83	34.58	27.13	103.1	1.3355
						700	6.05	34.56	27.22	95.3	1.4355
						800	5.40	34.56	27.30	88.0	1.5279
						1000	4.40	34.58	27.43	76.0	1.6934

STATION 40

5°00'N, 157°59'W February 23, 1950 Messenger time: 2315 GCT Weather: Scattered low cloud
Wind: 080°, 18 kt. Sea: 3-5 ft. Wire angle: 27° Depth of Observation: 1408 m.

OBSERVED						INTERPOLATED				CAICULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.40	35.12	23.02	4.73	.57	0	26.40	35.12	23.02	485.7	.0000
8	26.34	35.12	23.04	4.70	.54	10	26.35	35.12	23.03	484.6	.0485
42	26.18	35.12	23.09	4.71	.55	20	26.30	35.12	23.05	483.5	.0969
84	26.00	35.10	23.13	4.71	.57	30	26.28	35.12	23.05	483.4	.1453
170	18.64	34.79	24.97	2.89	1.34	50	26.18	35.12	23.09	481.2	.2417
260	9.72	34.67	26.76	1.44	2.51	75	26.02	35.11	23.13	477.8	.3617
353	----	34.61	-----	1.78	2.48	100	25.70	35.06	23.19	473.1	.4808
541	7.42	34.58	27.05	1.25	----	150	22.20	34.86	24.08	390.3	.6976
731	5.68	34.56	27.27	----	3.32	200	12.65	34.74	26.28	180.1	.8408
924	4.65	34.54	27.37	1.28	3.28	250	9.95	34.68	26.73	137.4	.9206
1408	3.20	34.60	27.57	1.92	3.20	300	8.97	34.64	26.86	125.4	.9867
						400	8.13	34.60	26.91	117.6	1.1089
						500	7.61	34.59	27.03	112.3	1.2246
						600	6.88	34.58	27.13	103.9	1.3335
						700	5.92	34.56	27.24	93.5	1.4329
						800	5.30	34.55	27.31	87.3	1.5241
						1000	4.39	34.54	27.40	78.7	1.6915

STATION 41

6°00'N, 158°03'W February 24, 1950 Messenger time: 1012 GCT Weather: Scattered low cloud
Wind: 100°, 17 kt. Sea: 3 - 5 ft. Wire angle: 16° Depth of observation: 1441 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.84	34.92	22.73	4.71	.50	0	26.84	34.92	22.73	513.2	.0000
9	26.84	34.90	22.72	4.71	.38	10	26.84	34.90	22.72	514.9	.0514
48	26.84	34.92	22.73	4.71	.45	20	26.84	34.90	22.72	515.3	.1029
95	26.51	34.97	22.87	4.57	.46	30	26.84	34.91	22.72	515.1	.1544
190	13.09	34.67	26.14	1.32	2.16	50	26.84	34.92	22.73	515.2	.2575
286	9.72	34.69	26.78	1.35	2.48	75	26.80	34.96	22.77	512.1	.3860
381	11.98	34.67	26.36	1.43	2.51	100	26.38	34.97	22.91	500.0	.5128
572	7.33	34.58	27.06	.56	3.07	150	22.25	34.71	23.95	402.5	.7393
763	5.61	34.54	27.26	1.04	3.08	200	12.23	34.67	26.31	177.3	.8850
955	4.68	34.58	27.40	1.26	3.14	250	10.30	34.68	26.67	143.4	.9656
1441	3.13	34.61	27.58	1.96	3.01	300	9.59	34.69	26.80	131.9	1.0348
						400	8.79	34.66	26.91	123.2	1.1631
						500	8.08	34.61	26.97	117.8	1.2844
						600	7.02	34.57	27.10	106.5	1.3973
						700	6.10	34.54	27.20	97.4	1.5001
						800	5.39	34.55	27.29	88.6	1.5938
						1000	4.50	34.59	27.43	76.5	1.7604

STATION 42

7°00'N, 157°58'W February 24, 1950 Messenger time: 1748 GCT Weather: Broken low cloud
Wind: 100°, 12 kt. Sea: 1-3 ft. Wire angle: 10° Depth of Observation: 1454 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.70	34.43	22.41	4.78	.36	0	26.70	34.43	22.41	544.1	.0000
10	26.71	34.42	22.40	4.67	.32	10	26.70	34.42	22.40	545.2	.0545
48	26.83	34.76	22.61	4.67	.38	20	26.78	34.46	22.40	545.3	.1090
97	24.85	35.07	23.46	4.00	.60	30	26.80	34.50	22.42	543.3	.1634
194	11.38	34.69	26.48	.67	2.58	50	26.75	34.80	22.67	521.0	.2698
290	9.68	34.69	26.78	.70	2.73	75	26.05	35.05	23.07	483.2	.3955
387	11.12	34.63	26.48	.92	2.68	100	24.40	35.07	23.59	434.4	.5104
580	6.96	34.58	27.12	.83	3.07	150	14.55	34.77	25.91	214.2	.6732
774	5.68	34.56	27.26	1.08	3.17	200	11.20	34.69	26.51	157.3	.7666
967	4.67	34.56	27.39	1.04	3.27	250	10.19	34.69	26.69	140.9	.8415
1454	3.21	34.61	27.58	1.77	2.09	300	9.59	34.69	26.80	131.9	.9101
						400	8.68	34.62	26.89	124.5	1.0391
						500	7.69	34.60	27.03	112.6	1.1584
						600	6.80	34.58	27.14	102.8	1.2668
						700	6.09	34.57	27.22	95.0	1.3665
						800	5.50	34.56	27.29	89.3	1.4594
						1000	4.60	34.56	27.39	79.9	1.6301

STATION 43

8°02'N, 157°49'W February 25, 1950 Messenger time: 0234 GCT Weather: Broken low cloud
Wind: 090°, 18 kt. Sea: 1 - 3 ft. Wire angle: 0° Depth of observation: 1472 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.80	34.38	22.34	4.80	.36	0	26.80	34.38	22.34	550.7	.0000
10	26.78	34.36	22.33	4.75	.28	10	26.80	34.36	22.32	552.6	.0552
50	26.67	34.45	22.43	4.72	.30	20	26.80	34.37	22.33	552.4	.1104
100	21.72	34.87	24.22	4.55	.41	30	26.78	34.39	22.35	550.7	.1656
198	10.84	34.70	26.59	.45	2.65	50	26.70	34.45	22.42	544.6	.2751
296	9.71	34.65	26.75	.69	2.72	75	26.10	34.82	22.89	501.4	.4060
394	8.65	34.63	26.90	.83	2.75	100	21.45	34.87	24.29	367.6	.5148
590	6.98	34.54	27.08	.67	3.03	150	12.90	34.81	26.28	178.6	.6519
786	5.40	34.51	27.26	1.39	3.11	200	10.82	34.70	26.59	149.7	.7544
982	4.44	34.56	27.41	1.23	3.19	250	10.09	34.66	26.69	141.4	.8076
1472	3.16	34.60	27.57	1.76	3.08	300	9.62	34.65	26.76	135.4	.8771
						400	8.59	34.63	26.91	122.4	1.0068
						500	7.73	34.58	27.00	114.8	1.1262
						600	6.90	34.54	27.09	107.1	1.2379
						700	6.00	34.51	27.19	98.3	1.3414
						800	5.30	34.51	27.27	90.4	1.4365
						1000	4.35	34.56	27.42	76.9	1.6053

STATION 44

8°53'N, 157°54'W February 25, 1950 Messenger time: 1045 GCT Weather: Scattered low and high (cirrus) cloud Wind: 060°, 17 kt. Sea: 1-3 ft. Wire angle: 4° Depth of observation: 1419 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.50	34.38	22.43	4.79	.38	0	26.50	34.38	22.43	541.7	.0000
10	26.46	34.36	22.43	4.71	.31	10	26.43	34.36	22.44	541.4	.0542
49	26.45	34.36	22.43	4.71	.28	20	26.36	34.36	22.46	539.6	.1082
97	19.58	34.72	24.67	4.01	.86	30	26.29	34.36	22.48	538.0	.1621
194	10.70	34.69	26.61	.53	2.68	50	26.27	34.36	22.49	538.6	.2698
291	9.52	34.67	26.79	.75	2.69	75	25.65	34.69	22.93	497.3	.3993
388	8.71	34.60	26.87	.65	2.80	100	18.00	34.72	25.08	292.6	.4983
582	6.86	34.54	27.10	.65	3.10	150	12.25	34.69	26.32	175.1	.6157
776	5.46	34.52	27.26	---	3.16	200	10.61	34.69	26.62	147.1	.6966
972	4.62	34.56	27.39	1.08	3.16	250	9.90	34.69	26.75	136.0	.7678
1419	3.26	34.56	27.53	1.71	3.07	300	9.42	34.66	26.80	131.2	.8350
						400	8.59	34.59	26.88	125.4	.9640
						500	7.60	34.56	27.01	114.4	1.0847
						600	6.70	34.53	27.11	104.9	1.1951
						700	5.95	34.52	27.20	96.9	1.2968
						800	5.33	34.52	27.28	89.8	1.3909
						1000	4.50	34.56	27.40	78.8	1.5610

STATION 45

9°55'N, 157°54'W February 25, 1950 Messenger time: 2015 GCT Weather: Scattered to broken low and high (Cirrus) cloud Wind: 060°, 16 kt. Sea: 3 - 5 ft. Wire angle: 32° Depth of observation: 1242 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	26.10	34.43	22.59	5.23	.42	0	26.10	34.44	22.60	525.6	.0000
9	26.14	34.42	22.57	5.07	.40	10	26.10	34.42	22.59	527.4	.0526
42	26.12	34.42	22.58	4.71	.40	20	26.13	34.42	22.58	528.6	.1054
80	20.14	34.81	24.60	4.63	.54	30	26.15	34.42	22.57	529.6	.1584
156	11.53	34.49	26.30	.95	2.54	50	26.05	34.47	22.64	523.9	.2637
231	10.19	34.74	26.74	.45	2.75	75	24.30	34.81	23.43	449.6	.3855
307	9.36	34.63	26.79	.41	----	100	16.50	34.70	25.42	259.6	.4744
462	8.14	34.61	26.97	.56	3.12	150	11.72	34.48	26.26	180.7	.5849
622	6.51	34.51	27.12	.61	3.25	200	10.60	34.70	26.63	146.2	.6670
788	5.44	34.58	27.31	.84	3.30	250	9.95	34.71	26.75	135.2	.7377
1242	3.76	34.60	27.51	1.53	3.25	300	9.40	34.63	26.78	133.3	.8052
						400	8.60	34.63	26.91	122.5	.9339
						500	7.75	34.59	27.01	114.2	1.0530
						600	6.72	34.52	27.10	106.2	1.1640
						700	5.90	34.53	27.21	95.6	1.2656
						800	5.40	34.58	27.32	86.5	1.3574
						1000	4.52	34.60	27.43	76.0	1.5214

STATION 46

11°02'N, 158°06'W February 26, 1950 Messenger time: 1st cast: 0733 GCT 2nd cast: 0840 GCT
Weather: Scattered low cloud Wind: 080°, 19 kt. Sea: 5 - 8 ft. Wire angle: 1st cast: 45°
2nd cast: 41° (Lower five bottles did not trip on first cast.) Depth of observation: 1371 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.88	34.34	22.59	4.77	.42	0	25.88	34.34	22.59	526.2	.0000
6	25.86	34.36	22.62	4.77	.30	10	25.88	34.36	22.61	525.1	.0526
33	25.84	34.34	22.61	4.73	.35	20	25.88	34.34	22.59	526.9	.1052
67	25.58	34.51	22.82	4.78	.35	30	25.86	34.34	22.60	526.6	.1578
134	14.36	34.60	25.82	3.30	1.25	50	25.75	34.36	22.65	522.8	.2628
202	11.10	34.51	26.39	1.25	2.40	75	25.45	34.53	22.87	502.7	.3911
270	9.79	34.65	26.73	.55	2.63	100	24.63	34.58	23.15	476.5	.5138
444	8.72	34.60	26.87	.65	2.86	150	13.15	34.58	26.05	200.1	.6836
590	7.04	34.58	27.10	.61	3.09	200	11.16	34.51	26.38	169.5	.7764
910	5.02	34.52	27.32	1.01	3.16	250	10.10	34.62	26.65	144.5	.8553
1371	3.43	34.67	27.60	1.53	3.11	300	9.58	34.66	26.77	134.1	.9254
						400	9.03	34.62	26.84	129.8	1.0581
						500	8.15	34.59	26.94	120.5	1.1841
						600	6.97	34.58	27.11	105.1	1.2977
						700	6.20	34.56	27.20	97.3	1.3997
						800	5.60	34.53	27.25	92.8	1.4955
						1000	4.63	34.53	27.37	82.3	1.6722

STATION 47

12°01'N, 158°03'W February 26, 1950 Messenger time: 1746 GCT Weather: Scattered low cloud
Wind: 080°, 22 kt. Sea: 5 - 8 ft. Wire angle: 35° Depth of observation: 1188 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.70	34.42	22.71	4.71	.43	0	25.70	34.42	22.71	515.1	.0000
8	25.71	34.40	22.69	4.75	.42	10	25.70	34.40	22.69	516.9	.0516
39	25.70	34.38	22.68	4.72	.41	20	25.69	34.39	22.69	517.7	.1033
75	23.13	34.97	23.89	5.07	.39	30	25.68	34.38	22.69	518.5	.1551
148	17.10	34.67	25.25	4.15	.79	50	25.63	34.50	22.79	509.2	.2579
224	11.02	34.47	26.38	1.06	2.61	75	23.20	34.97	23.87	406.9	.3725
300	9.67	34.58	26.70	.58	2.88	100	20.87	34.96	24.51	346.2	.4669
454	8.24	34.56	26.91	---	----	150	17.00	34.66	25.20	275.3	.6229
612	6.78	34.51	27.08	.50	3.21	200	12.50	34.49	26.11	195.5	.7411
772	5.62	34.51	27.23	.54	3.35	250	10.30	34.49	26.52	157.3	.8298
1188	3.79	34.56	27.48	1.29	3.38	300	9.65	34.58	26.70	141.0	.9048
						400	8.75	34.57	26.84	129.2	1.0407
						500	7.82	34.54	26.95	119.0	1.1656
						600	6.88	34.51	27.07	109.0	1.2804
						700	6.10	34.51	27.17	99.6	1.3855
						800	5.47	34.51	27.25	92.5	1.4823
						1000	4.57	34.53	27.36	81.7	1.6581

STATION 48

13°02'N, 157°51'W February 27, 1950 Messenger time: 0448 GCT Weather: Scattered to broken low cloud Wind: 080°, 19 kt. Sea: 5 - 8 ft. Wire angle: 5° Depth of observation: 1456 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD, (dyn.m.)
0	25.30	34.36	22.79	4.81	.37	0	25.30	34.36	22.79	507.5	.0000
10	25.33	34.33	22.76	4.80	.30	10	25.30	34.33	22.76	510.1	.0509
49	25.30	34.34	22.77	4.77	.31	20	25.30	34.32	22.75	511.3	.1020
97	21.13	34.97	24.44	5.08	.35	30	25.30	34.31	22.75	512.2	.1531
194	11.90	34.31	26.09	2.51	2.00	50	25.30	34.34	22.77	510.9	.2554
290	9.92	34.60	26.67	.54	2.87	75	24.42	34.87	23.43	448.4	.3754
387	8.48	34.51	26.83	.56	2.90	100	20.70	34.97	24.57	340.9	.4744
580	6.26	34.51	27.16	.53	3.13	150	13.95	34.40	25.75	229.0	.6174
774	5.08	34.51	27.30	1.00	3.17	200	11.70	34.32	26.13	193.3	.7235
968	5.62	34.54	27.26	1.20	3.13	250	10.52	34.48	26.47	161.8	.8127
1456	2.98	34.60	27.59	1.79	3.03	300	9.74	34.60	26.70	140.9	.8888
						400	8.30	34.51	26.86	126.7	1.0234
						500	7.16	34.51	27.03	111.5	1.1433
						600	6.13	34.51	27.17	98.8	1.2492
						700	5.49	34.51	27.25	91.4	1.3450
						800	5.00	34.51	27.30	86.5	1.4347
						1000	4.26	34.55	27.42	76.4	1.5991

STATION 49

14°00'N, 157°51'W February 27, 1950 Messenger time: 1427 GCT Weather: Scattered to broken low cloud Wind: 060°, 19 kt. Sea: 5-8 ft. Wire angle: 15° Depth of Observation: 1412 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.00	34.11	22.69	5.10	.41	0	25.00	34.11	22.69	516.7	.0000
10	24.99	34.11	22.69	4.87	.38	10	25.00	34.11	22.69	517.1	.0517
47	24.99	34.09	22.68	4.85	.40	20	25.00	34.10	22.68	518.2	.1034
93	18.68	34.36	24.63	4.19	.83	30	25.00	34.09	22.67	519.3	.1553
186	10.95	34.45	26.38	----	2.47	50	24.98	34.10	22.69	518.9	.2592
279	9.32	34.51	26.70	.64	2.80	75	24.90	34.29	22.86	503.8	.3871
372	8.30	34.52	26.87	.42	2.90	100	17.00	34.37	25.05	294.9	.4872
558	6.32	34.49	27.13	.51	3.05	150	13.00	34.42	25.96	208.9	.6136
745	5.08	34.49	27.29	.71	3.08	200	10.48	34.46	26.46	161.4	.7066
932	4.26	34.54	27.41	----	3.08	250	9.70	34.49	26.62	147.2	.7842
1412	3.04	34.60	27.58	1.84	2.94	300	9.11	34.51	26.73	137.6	.8558
						400	7.94	34.51	26.91	121.2	.9860
						500	6.80	34.50	27.07	107.2	1.1009
						600	5.97	34.49	27.18	98.1	1.2043
						700	5.33	34.49	27.25	90.9	1.2995
						800	4.80	34.51	27.33	83.9	1.3876
						1000	4.05	34.56	27.45	73.1	1.5460

STATION 50

14°57'N, 157°59'W February 27, 1950 Messenger time: 2341 GCT Weather: Scattered low cloud
Wind: 060°, 18 kt. Sea: 5-8 ft. Wire angle: 45° Depth of Observation: 1104 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σt (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	25.10	34.25	22.77	4.83	.43	0	25.10	34.25	22.76	509.7	.0000
8	25.10	34.25	22.77	4.80	.34	10	25.10	34.25	22.76	510.1	.0510
32	25.07	34.25	22.76	4.87	.60	20	25.10	34.25	22.76	510.4	.1020
58	25.07	34.23	22.76	4.83	.41	30	25.10	34.25	22.77	510.9	.1531
110	19.51	34.92	24.85	4.78	.46	50	25.10	34.23	22.75	513.1	.2555
166	14.79	34.42	25.59	3.95	.98	75	25.05	34.34	22.85	504.6	.3828
226	11.16	34.29	26.21	2.14	2.17	100	23.00	34.90	23.88	407.2	.4970
---*	-----	-----	-----	----	----	150	16.40	34.51	25.29	272.8	.6677
---*	-----	-----	-----	----	----	200	12.60	34.32	25.95	210.0	.7890
---*	-----	-----	-----	----	----	250**	9.90	34.29	26.43	165.3	.8833
1104	4.14	34.52	27.41	1.24	3.20	300**	8.77	34.37	26.68	142.3	.9606
						400**	8.28	34.46	26.83	129.8	1.0975
						500**	7.21	34.49	27.01	113.7	1.2200
						600**	6.36	34.49	27.12	103.3	1.3293
						700**	5.67	34.49	27.21	95.3	1.4294
						800**	5.09	34.50	27.29	88.2	1.5219
						1000**	4.33	34.51	27.28	80.1	1.6917

* The three water sampling bottles above the lowest bottle apparently pretripped.

** The interpolated values below 200 meters tabulated above were obtained by interpolation between stations 49 and 51 (except that the salinity values were modified by information from the cast at station 50) and their accuracy is questionable.

STATION 51

17°01'N, 157°56'W February 28, 1950 Messenger time: 1753 GCT Weather: Scattered to broken low cloud Wind: 060°, 17 kt. Sea: 3-5 ft. Wire angle: 22° Depth of Observation: 1421 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (μg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	Δ D (dyn.m.)
0	24.00	34.72	23.45	4.95	.48	0	24.00	34.72	23.45	444.3	.0000
9	24.02	34.69	23.42	4.90	.41	10	24.02	34.69	23.42	447.4	.0446
45	24.00	34.70	23.43	4.91	.38	20	24.04	34.68	23.40	449.1	.0894
90	23.40	35.05	23.88	4.93	.38	30	24.05	34.68	23.39	450.0	.1344
182	18.86	34.87	24.98	4.75	.51	50	23.98	34.72	23.45	445.8	.2239
274	10.77	34.25	26.25	2.79	2.05	75	23.70	35.00	23.75	418.7	.3321
366	8.96	34.40	26.67	.91	2.83	100	23.14	35.05	23.95	400.4	.4347
552	7.04	34.49	27.03	.52	3.18	150	21.00	34.97	24.48	350.5	.6232
740	5.66	34.49	27.21	.69	3.28	200	16.80	34.75	25.39	266.0	.7781
931	4.75	34.49	27.32	.90	3.37	250	12.04	34.30	26.06	201.8	.8956
1421	3.37	34.58	27.54	1.55	3.19	300	10.10	34.25	26.36	172.7	.9898
						400	8.60	34.43	26.75	137.1	1.1456
						500	7.55	34.48	27.09	119.3	1.2746
						600	6.60	34.49	27.18	106.6	1.3884
						700	5.90	34.49	27.25	98.4	1.4917
						800	5.32	34.49	27.25	92.2	1.5878
						1000	4.50	34.50	27.36	83.0	1.7645

STATION 52

19°00'N, 157°42'W March 1, 1950 Messenger time: 1232 GCT Weather: Broken low cloud
Wind: 050°, 08 kt. Sea: 3 - 5 ft. Wire angle: <5° Depth of observation: 1473 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)
0	24.00	34.69	23.43	4.98	.42	0	24.00	34.69	23.42	446.5	.0000
10	24.00	34.67	23.41	4.94	.35	10	24.00	34.67	23.41	448.3	.0447
49	23.99	34.70	23.44	4.94	.33	20	24.00	34.67	23.41	448.6	.0896
98	23.94	34.76	23.50	4.96	.34	30	24.00	34.68	23.42	448.3	.1344
196	19.62	34.92	24.82	4.69	.42	50	24.00	34.70	23.43	447.7	.2240
294	12.07	34.23	26.00	3.48	1.47	75	24.00	34.73	23.45	446.5	.3359
392	8.57	34.23	26.60	2.35	2.31	100	23.90	34.76	23.51	442.6	.4473
588	5.97	34.29	27.02	.99	3.02	150	22.40	34.85	24.01	396.4	.6579
783	5.05	34.45	27.26	1.02	3.05	200	19.38	34.92	24.88	314.8	.8365
979	4.27	34.51	27.39	1.15	3.08	250	15.45	34.45	25.47	259.2	.9808
1473	3.02	34.58	27.57	1.61	3.03	300	11.72	34.23	26.06	202.5	1.0968
						400	8.37	34.24	26.64	147.4	1.2728
						500	6.75	34.26	26.89	124.1	1.4095
						600	5.90	34.30	27.03	111.2	1.5280
						700	5.39	34.38	27.16	99.8	1.6343
						800	4.97	34.45	27.26	90.5	1.7302
						1000	4.18	34.51	27.40	78.3	1.9005

STATION 53

20°54'N, 158°04'W March 2, 1950 Messenger time: 0718 GCT Weather: Scattered low cloud
Wind: 090°, 17 kt. Sea: 1-3 ft. Wire angle: 10° Depth of Observation: 1440 m.

OBSERVED						INTERPOLATED				CALCULATED	
Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	O_2 (ml/L)	PO_4-P (µg at/L)	Depth (m)	T (°C)	S (°/oo)	σ_t (mg/cm^3)	$10^5\delta$	Δ D (dyn.m.)
0	24.20	34.63	23.32	4.99	.43	0	24.20	34.63	23.32	456.7	.0000
10	24.19	34.61	23.31	4.95	.34	10	24.20	34.61	23.31	458.4	.0458
48	24.18	34.63	23.33	4.95	.35	20	24.20	34.60	23.30	459.5	.0917
96	23.19	35.08	23.96	4.91	.32	30	24.20	34.60	23.30	459.9	.1376
192	19.59	35.07	24.94	4.58	.41	50	24.19	34.64	23.33	457.5	.2294
287	12.43	34.25	25.94	4.10	1.21	75	23.85	35.03	23.73	420.7	.3392
384	8.77	34.14	26.50	3.03	2.03	100	23.05	35.08	24.00	395.7	.4415
575	5.80	34.27	27.02	1.16	2.85	150	21.17	35.11	24.55	344.7	.6274
767	4.91	34.42	27.25	.95	2.99	200	19.25	35.06	25.02	301.3	.7896
960	4.20	34.49	27.38	1.14	3.01	250	16.28	34.61	25.40	266.0	.9322
1448	3.04	34.58	27.57	1.69	2.92	300	11.70	34.20	26.04	204.6	1.0505
						400	8.46	34.14	26.54	156.4	1.2321
						500	6.77	34.20	26.84	128.8	1.3756
						600	5.68	34.29	27.05	109.1	1.4954
						700	5.19	34.37	27.18	97.9	1.5997
						800	4.77	34.44	27.28	88.6	1.6937
						1000	4.10	34.51	27.39	78.5	1.8623

OBSERVED								CALCULATED		
DEPTH (m)	T_1 (°C)	T_2 (°C)	$\rho_1\rho_2$ (Ω^2m^2)	ρ_2^2 (Ω^2m^2)	ρ_2 (Ωm)	ρ_1 (Ωm)	ρ_1/ρ_2	DEPTH (m)	ρ_1 (Ωm)	$\Delta\rho_1$ (Ωm)
7000	4.10	24.21	51.20	1.9852	1.4088	1.4088	1.0000	7000	1.9852	1.9852
800	4.11	24.44	51.38	1.9852	1.4088	1.4088	1.0000	800	1.9852	1.9852
400	2.18	24.24	51.18	1.9852	1.4088	1.4088	1.0000	400	1.9852	1.9852
600	2.88	24.58	51.02	1.9852	1.4088	1.4088	1.0000	600	1.9852	1.9852
200	6.14	24.50	50.84	1.9852	1.4088	1.4088	1.0000	200	1.9852	1.9852
400	8.42	24.14	50.24	1.9852	1.4088	1.4088	1.0000	400	1.9852	1.9852
800	17.10	24.50	50.04	1.9852	1.4088	1.4088	1.0000	800	1.9852	1.9852
320	18.58	24.87	52.40	1.9852	1.4088	1.4088	1.0000	320	1.9852	1.9852
800	19.52	25.05	52.05	1.9852	1.4088	1.4088	1.0000	800	1.9852	1.9852
720	21.77	25.44	52.22	1.9852	1.4088	1.4088	1.0000	720	1.9852	1.9852
100	22.02	25.08	52.00	1.9852	1.4088	1.4088	1.0000	100	1.9852	1.9852
80	24.14	25.06	52.18	1.9852	1.4088	1.4088	1.0000	80	1.9852	1.9852
40	24.40	25.22	52.40	1.9852	1.4088	1.4088	1.0000	40	1.9852	1.9852
20	24.40	25.40	52.40	1.9852	1.4088	1.4088	1.0000	20	1.9852	1.9852
10	24.40	24.87	52.27	1.9852	1.4088	1.4088	1.0000	10	1.9852	1.9852
0	24.50	24.62	52.45	1.9852	1.4088	1.4088	1.0000	0	1.9852	1.9852

ATMO: O_2 20.9%, N_2 79.0%, Argon 0.9%, CO_2 0.03% and Hydrogen, Helium, Neon and traces

Rock: Porosity 5%, Density 2.7 g/cc, Water content 1% by weight, Permeability 1 millidarcy

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